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SALICYLATE THERAPY FOR RHEUMATIC FEVER AND ATROPHIC ARTHRITIS (STILL'S DISEASE) IN CHILDREN

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The use of salicylates for the treatment of rheumatic fever, first popularized in 1876, is one of the most widely accepted therapeutic measures in the field of medicine. The striking symptomatic relief which salicylates afford the patient with acute rheumatic fever is very impressive, but despite much discussion there has, until recently, been little evidence that the drug exerts a specific effect on the progress of the disease. Hanzlik[1], in his excellent monograph on salicylates in 1926, pointed out that the need for large doses was appreciated very soon and that the early investigators felt that salicylates did exert a specific effect on the disease process. Hanzlik, however, stated that no evidence existed in the available literature that salicylates exerted any effect beyond their non-specific analgesic and antipyretic action. There is also almost complete agreement in the present textbooks on medicine and pediatrics that salicylates have value for symptomatic relief but nothing more.

This prevailing view has been challenged by Coburn[2], who has recently reported his experiences with salicylate therapy in rheumatic fever in naval personnel. Extending earlier studies, he now postulates that rheumatic fever is essentially an inflammatory process resulting from an abnormal antibody response in the rheumatic subject to antigen liberated by infection with group A hemolytic streptococci. Further experimental work by Coburn and Kapp[3] indicates that sodium salicylate interferes with this antibody-antigen reaction. With this experimental background as a guide, Coburn[2] gave adult rheumatic patients average daily doses of 10 Gm. (at times, 20 Gm.) of sodium salicylate both orally and intravenously. Using a simple technique for salicylate determinations[4], he correlated the clinical and laboratory findings with the plasma salicylate levels. His conclusions are: (1) Evidence of rheumatic activity subsides promptly when the plasma salicylate is maintained at a level of 359-400 micrograms per cubic centimeter, but is not affected at levels below 250 micrograms per cubic centimeter; (2) intravenous administration of sodium salicylate is more effective than oral administration for the first week of treatment; (3) sodium salicylate, given in large enough doses, will apparently stop the progression of cardiac involvement and prevent cardiac damage if it has not already taken place.

Since the above report was published, we have been treating children with rheumatic fever or atrophic arthritis with salicylates and have correlated their clinical courses

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1. Hanzlik, P. J.: Actions and Uses of the Salicylates and Cinchopen in Medicine, Medicine 5:197-373 (Aug.) 1926.
2. Coburn, Alvin F.: Salicylate Therapy in Rheumatic Fever, Bull. Johns Hopkins Hosp. 73:435-464 (Dec.) 1943.
3. Coburn, Alvin F., and Kapp, E. M.: Effect of Salicylates on Precipitation of Antigen with Antibody. J. Exper. Med. 77:173-178 (Feb.) 1943.
4. Brodie, Bernard B.; Udenfriend, Sidney; and Coburn, Alvin F.: The Determination of Salicylic Acid in Plasma, J. Pharmacol. & Exper. Therap. 80:114-117 (Jan.) 1944.

with the plasma salicylate levels[5]. This paper is in the nature of a preliminary report in regard to the results obtained.

Method of Administration of Salicylates

The oral route was used exclusively in 5 children, and for maintenance dosage in 4 who were given intravenous infusions. The daily dose varied from 85 to 293 mg. per kilogram of body weight[6]. In most instances this total amount was divided into six doses —one every four hours—and was accompanied by one-third to one-half as much sodium bicarbonate or magnesium carbonate. Sodium salicylate was used in most cases except when cardiac edema was present; in such cases aspirin was used. The intravenous route was used in 4 patients, a total of eight times, for the initial administration of sodium salicylate. Our plan was to give daily intravenous infusions for one week, but we soon found that this was not practicable. In general, the children, from 6 to 12 years old, cooperated very well during the first infusion but became much too upset by a second infusion to justify further intravenous therapy. Intravenous therapy is now used only in resistant cases. The sodium salicylate was prepared by dissolving the chemically pure drug in normal saline to make up a 1 per cent solution. A total dose of 190-220 mg. per kilogram was allowed to flow in by drip over a period of four hours.

Attained Plasma Salicylate Levels

Table 1 shows the relationship between attained plasma salicylate levels and varying doses of salicylates by mouth. It is evident that there is quite a bit of variation, but in general levels above 300 micrograms per cubic centimeter were obtained with twenty-four hour doses of 195-220 mg. per kilogram. Twenty-four hour doses below 195 mg. per kilogram did not produce plasma levels above 300 micrograms per cubic centimeter except in 1 patient. The fact that this patient had such high levels may be partly explained by her relatively poor fluid intake. No significant difference in plasma levels is noted between the patients given aspirin and those given sodium salicylate by mouth.

5. We are greatly indebted to Dr. William A. Wolff of the Department of Toxicology, who personally performed all the plasma salicylate determinations according to the technique outlined by Coburn (2).

6. For conversion into the apothecaries' system, 72 mg. per kilogram equals ½ grain per pound; 143 mg. per kilogram equals 1 grain per pound; 215 mg. per kilogram equals 1½ grains per pound; 286 mg. per kilogram equals 2 grains per pound.

TABLE 1.

Relation of Oral Dose of Salicylates to Attained Plasma Level

Patient	*Weight* (Kg.)	*24-Hour-Dose* (Mg./Kg. body wt.)	*Alkali* (% of Salicylate Dose)	*Plasma Salicylate Level* (Micrograms /cc.)
R.K.	27.3	293	50	420
H.S.	31.4	255	100	780
				760
D.P.	22.7	220	40	380
				305
R.K.	27.3	219	33	360
				360
				330
G.P.	23.4	213*	0	400
				420
M.S.	11.1	207	50†	230
				250
L.H.	20.0	200*	50†	330
				310
H.S.	31.4	200	100	273
				283
A.P.	40.9	195	50	310
				260
D.P.	22.7	176	40	260
				245
G.P.	23.4	170*	0	212
				175
R.K.	27.3	146	50	290
				280
				270
L.T.	18.8	138	0	270
				120
H.S.	31.4	127	50	320
				400
				430
				340
				300
G.P.	23.4	85*	0	140

* Acetyl salicylic acid. All others, sodium salicylate
† Magnesium carbonate. All others, sodium bicarbonate

Table 2 shows the plasma salicylate levels attained fifteen minutes after the intravenous infusion of 190-220 mg. of sodium salicylate per kilogram of body weight. The levels range from 295 to 490 micrograms per cubic centimeter. It is possible that the one low level may be explained by the fact that, because of maladjustment in the rate of flow, one-third of the total dose ran in during the first hour of the infusion; the other two-thirds was then adjusted to run in over the remaining three hours.

In comparing the levels obtained in this group of children with those reported by Coburn in his group of adults[2], we find that significantly higher doses in proportion to body weight are necessary in children. We believe that intravenous doses and twenty-four oral doses should approximate 215 mg. per kilogram (1½ grains per pound) in order to produce effective plasma salicylate levels. The level attained may be affected by fluid intake, kidney function, the simultaneous use of sodium bicarbonate, and

TABLE 2.

Relation of Intravenous Dose of Sodium Salicylate To Attained Plasma Level

Patient	*Weight* (Kg.)	*Dose in 4 Hours* (Mg./Kg. body wt.)	*Plasma Salicylate Level* (Micrograms/cc.)
D.P.	22.7	220	410
R.K.	27.3	219	380
A.P.	40.9	195	490
H.S.	31.4	190	295

other individual factors. Therefore, chemical determinations[4] of the plasma salicylate levels should be used as a final guide to dosage. From this small series it is our impression that levels above 350 micrograms per cubic centimeter are necessary for therapeutic effect. This is in agreement with the findings of Coburn. It is quite possible, however, that levels in the neighborhood of 300 micrograms per cubic centimeter will be effective if they are preceded by higher levels obtained by intravenous therapy.

Reactions

One child (case 2) developed a severe reaction from the salicylate administration, with nausea, vomiting and acidosis (the carbon dioxide combining power was 25 volumes per cent, and the blood pH was 7.22). However, this condition was quickly relieved with parenteral sixth molar sodium lactate and Ringer's solution. After this the child was able to take 5 Gm. of sodium salicylate daily by mouth without further trouble.

Two children had tinnitus after intravenous therapy. Two developed nausea and vomiting. Changing the drug from aspirin to sodium salicylate with sodium bicarbonate resulted in relief from these symptoms in one child (case 2). The other child (case 4) was kept on the oral dose of sodium salicylate and given syntropan, 25 mg. before meals, with disappearance of symptoms. Dr. W. L. Venning, Jr., suggested the use of syntropan because of Paul's[7] and Ivy's[8] finding that the nausea and vomiting attending oral salicylate therapy may be due to gastric retention rather than to primary gastric irritation. It will be of interest to note if further observation shows that antispasmodics will always prevent the nausea and vomiting associated with the ingestion of salicylates.

Prothrombin activity was followed on 5 patients. There was slight prolongation of the microprothrombin times in all patients receiving salicylate therapy.

7 Paul, William D.: Effect of Aspirin on Gastric Mucosa, J. Iowa M. Soc. 33:153-158 (April) 1943.
8. Ivy, A. C., quoted by Paul, William D. (7)

Results of Therapy in Rheumatic Fever

It would, of course, be premature to report on the specific effect of this form of treatment in this small series. It is our impression, however, that it is as effective as Coburn's results indicate it to be in adults. Eight patients with rhemuatic fever and carditis were treated, one of whom (M. S.) died. This 6 year old child was decidedly malnourished and underdeveloped, weighing only 11.1 Kg. (24½ pounds) on admission. Although there was no definite history of rheumatic or cardiac symptoms until six weeks before admission, she was the picture of chronic cardiac failure, with marked anorexia, dyspnea, and orthopnea. She failed to show any improvement on digitalis or salicylate therapy. Because of her anorexia and feeble condition, we were never able to raise her plasma salicylate level above 250 micrograms per cubic centimeter. After a hospital stay of twelve days she suddenly became very cyanotic and expired. Autopsy showed both acute and chronic rheumatic carditis with adhesive pericarditis, involvement of the aortic, mitral and tricuspid valves, and rheumatic pneumonitis and pulmonary congestion.

Two other patients with marked cardiac failure and edema were treated with salicylates. Both patients showed evidence of rheumatic activity, one (L.T.) being a chronic recurrent case and the other (L.H.) being in his first known rheumatic episode. Both children were given digitalis and mercurial diuretics as well as salicylates. Improvement occurred in both children, but it is difficult to ascribe this to salicylate therapy.

The remaining five children, with acute rheumatic fever, all showed a prompt response to adequate salicylate therapy. Short summaries of these cases are given:

Case 1, R.K. (fig. 1).

This 10 year old white boy entered the hospital with a history of recurrent polyarticular rheumatism for six weeks, treated with sulfadiazine and 1.3 Gm. (20 grains) of sodium salicylate daily. Despite this, he had recurrent pain and swelling of his joints. On admission positive findings were: a temperature of 102 F.; a corrected sedimentation rate of 30 mm. in an hour (Wintrobe method); a moderately enlarged heart with mitral and aortic systolic and diastolic murmurs; a systolic blood pressure of 98, diastolic, 50; electrocardiographic evidence

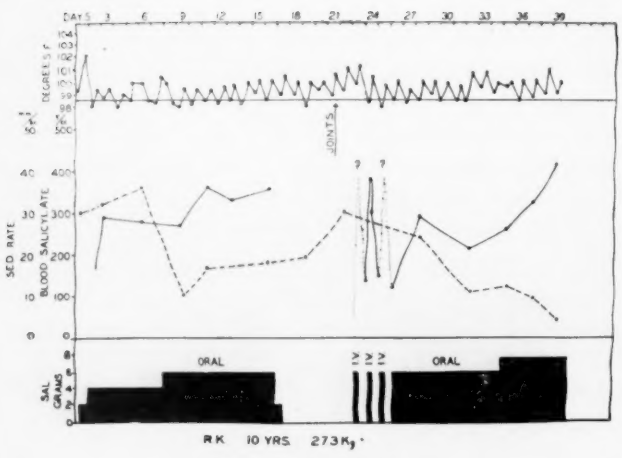

Fig. 1. Case 1

of first degree heart block (P-R interval 0.24 seconds). He was started on sodium salicylate by mouth, 4 Gm. daily at first and then 6 Gm. daily (219 mg. per kilogram), with one-third this amount of sodium bicarbonate. The sedimentation rate fell by the ninth day, but began rising again two days later. Salicylates were discontinued on the eighteenth day, and within three days there was a recurrence of the painful swelling of the joints. On the twenty-third, twenty-fourth, and twenty-fifth days 6 Gm. of sodium salicylate were given intravenously, followed by an oral dose of 6 Gm. daily. The peak salicylate levels were not obtained for the first and third infusions, but the chart shows the levels obtained before the second infusion and fifteen minutes, two hours, and sixteen hours after it was completed. Following the infusions there was a prompt fall in the sedimentation rate. In order to raise the plasma salicylate level, the oral dose of sodium salicylate was increased to 8 Gm. daily (293 mg. per kilogram). No untoward symptoms were noted. The boy was discharged on 4 Gm. of sodium salicylate daily. When he was seen two weeks later he had had no return of symptoms and his sedimentation rate was 4 mm. in an hour.

Case 2, D.P. (fig. 2).

This 6 year old boy entered the hospital with a history of recurrent attacks of polyarticular rheumatism over a period of six months. Positive findings on admission were: a chronically ill appearance, slightly enlarged heart, rapid pulse, moderately enlarged spleen, temperature of 100.8 F., corrected sedimentation rate of 18 mm. in an hour, and an elevated P-R interval (0.18 seconds). After a few days of observation

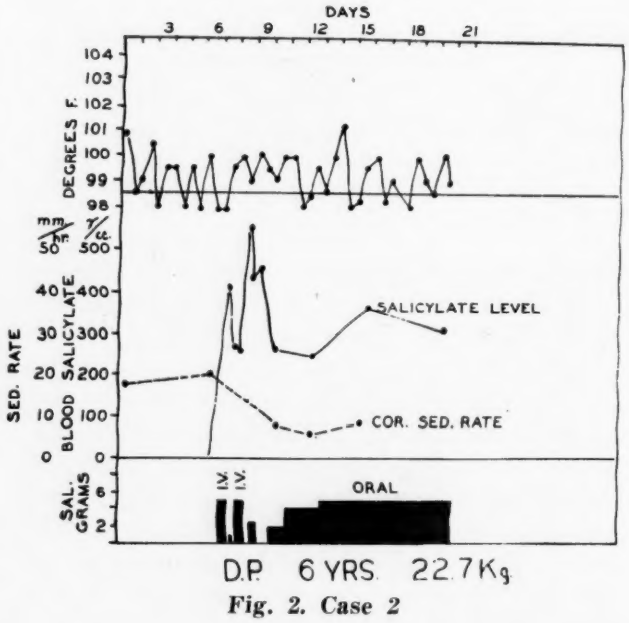

Fig. 2. Case 2

he was given two intravenous infusions of 5 Gm. of sodium salicylate (220 mg. per kilogram). He was also given some sodium salicylate by mouth; soon afterwards he began to vomit and developed a moderate acidosis, with a carbon dioxide combining power of 25 volumes per cent, a serum *p*H of 7.22, and an acid urine. This acidosis was relieved with sixth molar sodium lactate and Ringer's solution, given intravenously, and he was then able to take as much as 5 Gm. of sodium salicylate by mouth, with one-third this amount of sodium bicarbonate, for the rest of his hospital stay without symptoms. He showed rapid clinical improvement; the corrected sedimentation rate dropped to normal and the P-R interval dropped to 0.14 seconds. He was given sodium salicylate for two weeks after discharge. There was no recurrence after therapy was discontinued.

Case 3, G.P. (fig. 3).

This 8½ year old girl entered the hospital with a story of muscle pains of five days' duration. Positive findings on admission were fever of 100.8 F., rapid pulse, a grade I systolic murmur, an elevated white count, and a corrected sedimentation rate of 50 mm. in an hour. The temperature and pain subsided when she was given aspirin, and it was felt she had a mild early attack of rheumatic fever. She was given increasing doses of aspirin, which was later changed to sodium salicylate and soda because of nausea and vomiting. Her white count and sedimentation rate dropped to normal. On the twentieth hospital day she showed Koplik spots

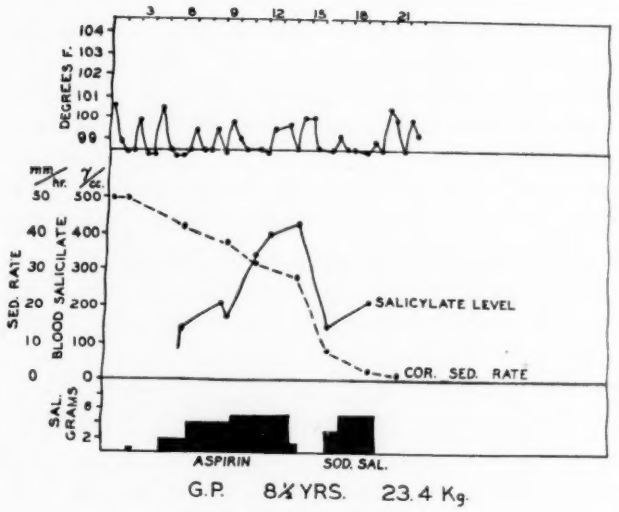

Fig. 3. Case 3

and fever (having been exposed to a case of measles on the ward) and was discharged on prophylactic doses of sulfadiazine. She had a moderately severe attack of measles at home. One month after discharge she was seen again. At this time she had no complaints, but her white cell count was elevated again to 16,000 and her sedimentation rate to 38.5 mm. in an hour, corrected. The apical systolic murmur was now of grade II intensity. It was felt that she had a recurrence of rheumatic activity, and therapy was reinstituted at home. This child should have been kept on salicylates following discharge.

Case 4, H. S.

This 12 year old girl entered the hospital with a history of recurrent polyarticular rheumatism for five years. The present episode was of three weeks' duration. On admission the positive findings were: temperature of 102 F., painful left ankle, and painful, swollen right finger. There was a blotchy, erythematous rash over the trunk quite suggestive of erythema marginatum, but more urticarial. The white cell count was 14,450, and the sedimentation rate was 40 mm. in an hour, corrected. The heart was slightly enlarged and a grade III apical systolic murmur was heard. An electrocardiogram showed evidence of marked myocardial disease. After a preliminary test dose of sodium salicylate by mouth, she was given 6 Gm. of sodium salicylate intravenously (190 mg. per kilogram). Four hours later she was started on divided oral doses of sodium salicylate, but because of nausea and vomiting this was not increased over 4 Gm. daily. However, when the nausea was controlled by the administration of syntropan, plasma salicylate levels ranged between 320 and 430 micrograms per cubic centimeter, and a larger dose was not given. Her temperature, white cell count, and sedimentation rate dropped, and her skin rash cleared promptly. In the fourth week of hospitalization she developed salicylate acidosis. Therapy was stopped, and she developed a typical rheumatic recurrence. Salicylate therapy was reinstituted and was followed by a good recovery. We believe that the delayed recovery was due to inadequate salicylate levels and to the discontinuance of therapy.

Case 5, A.P.

This 13½ year old boy entered the hospital with a history of severe chorea of nine days' duration. On admission he was extremely hyperactive and showed a typical picture of chorea. He could not handle eating utensils and had difficulty in making himself understood. Positive findings on admission, in addition to the choreiform movements, were a grade III apical systolic murmur, a grade I systolic murmur in the aortic area, and an elevated sedimentation rate (25 mm. in an hour). There was no cardiac enlargement and the white cell count was normal. In order to see if chorea would respond to heavy salicylate therapy, we gave this boy infusions of 8 Gm. of sodium salicylate (195 mg. per kilogram) on two successive days. This method of therapy was not continued because of the severe emotional disturbance which the four-hour infusions caused. He was then put on 8 Gm. of sodium salicylate by mouth for the remainder of his hospital stay—a total of two weeks' treatment. Five days after the salicylate therapy was started there was definite improvement in the chorea. By the time of discharge he was markedly improved. He was seen again after two weeks of bed rest at home, at which time there was almost no evidence of chorea. The improvement in this case was very striking, especially when one realizes that the chorea was of only nine days' duration and was very severe at the time treatment was started. One cannot draw a definite conclusion from this case, but it has encouraged us to try this same therapy again. The result was at least as impressive as any we have had with fever therapy.

Results of Therapy in Still's Disease

At the present time we have 4 children

with Still's disease (atrophic arthritis) under treatment with large doses of salicylates, which are continued as long as the sedimentation rate remains elevated. These children have shown remarkable improvement under treatment. Symptomatic relief is almost immediate, with striking improvement in the mobility of the stiff joints. Gain in appetite, weight, and general well being is prompt. The sedimentation rate, however, remains elevated for as long as two to three months. At present this form of therapy appears to be giving excellent results. However, no definite conclusions can be reached until a larger series has been studied for a longer period of time.

Conclusions

In the management of rheumatic fever we are interested in the control of the immediate attack and in the prevention of future attacks. Our experiences reported in this paper lead us to agree with Coburn that salicylates exert a specific effect on the rheumatic process. In order to obtain good clinical results, however, it is necessary to give sufficient salicylates to produce a plasma salicylate level of above 350 micrograms per cubic centimeter. This requires repeated plasma determinations and careful clinical observation in the hospital, in case toxic effects occur. We believe the most satisfactory plan of therapy is to give the sodium salicylate by mouth rather than intravenously. The oral doses are given every four hours and total 215 mg. per kilogram (1½ Gm. per pound) daily. This dose is accompanied by one-third as much sodium bicarbonate. Although higher salicylate levels can be reached if sodium bicarbonate is not used[9], we believe that the use of soda is indicated until we know more about the mechanism of "salicylate acidosis." The desired levels can be obtained by increasing the dose of both drugs. If plasma salicylate levels do not rise above 350 micrograms per cubic centimeter, the oral dose should be increased. After the clinical and laboratory evidences of activity have been absent for two weeks, the salicylates may be discontinued. If signs of activity reappear, the course of therapy should be repeated. It is hoped that the occasional nausea and vomiting occurring with these large doses of salicylates will be controlled by antispasmodics.

9. Smull, Katharine; Rene, Wegria: and Leland, Jessica: Effect of Sodium Bicarbonate on Serum Salicylate Level During Salicylate Therapy of Patients With Acute Rheumatic Fever, J.A.M.A. 125:1173-1175 (Aug. 26) 1944.

Further attacks of rheumatic fever have been reported to be successfully prevented by: (1) immunization with streptococcus toxin against streptococcus infection[10], (2) daily doses of sulfanilamide during the season of increased respiratory infections to *prevent* streptococcus infections[11], (3) maintenance doses of sodium salicylate for one month after each episode of streptococcus pharyngitis in order to prevent the presumed antigen-antibody reaction from taking place[12]. Until more work has been done on the value of streptococcus immunization, the last method is our preference. Since children with streptococcus pharyngitis may not specifically complain of a sore throat, we advise sodium salicylate prophylaxis after every respiratory infection.

Summary

Our experiences with salicylate therapy for rheumatic fever and atrophic arthritis in children have been reported. From this short series of cases we believe that salicylate therapy, in sufficient dosage to give plasma salicylate levels above 350 micrograms per cubic centimeter, exerts a specific effect on the rheumatic process.

Abstract of Discussion

Dr. B. O. Edwards (Asheville): How long does Dr. Lawson keep his patients in bed?

Dr. J. M. Arena (Durham): Toxic manifestations resulting from large doses of salicylate are terrifying to me, and I think that a very high percentage of patients have severe intoxication. I would like to ask Dr. Lawson to say something about his experience with hematuria and intoxication in these cases.

Dr. Lawson: Our advice is to keep these children who have been given large doses of salicylate in the hospital until the sedimentation rate has become normal—some two weeks—and at the end of that time to send them home with instruction for complete bed rest for another two weeks. At the end of that time if the sedimentation rate and other signs are normal we allow them to get up gradually.

With respect to intoxication, we had no evidence of renal damage except in the case of one child with severe acidosis who had albuminuria, but no hematuria. Early recognition of acidosis is very important.

10. Wasson, Valentina P., and Brown, Edward E.: Immunization Against Rheumatic Fever, J. Pediat: 23:24-30 (July) 1943.

11. (a) Coburn, Alvin F., and Moore, L. V.: A Follow-Up Report on Rheumatic Subjects Treated With Sulfanilamide, J.A.M.A. 117:176 (July 19) 1941.
    (b) Kuttner, A. G., and Reyersbach, G.: Prevention of Streptococcal Upper Respiratory Infections and Rheumatic Recurrences in Rheumatic Children by Prophylactic Use of Sulfanilamide, J. Clin. Investigation 22:77-85 (Jan.) 1943.

12. Coburn, Alvin F., and Moore, L. V.: Salicylate Prophylaxis in Rheumatic Fever, J. Pediat. 21:180-183 (Aug.) 1942.

OPHTHALMOLOGIC LESIONS ENCOUNTERED IN THE TROPICS, WITH SPECIAL REFERENCE TO THE OCULAR MANIFESTATIONS OF MALARIA

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Prior to the present war a large number of physicians looked upon malaria without a great deal of concern, and too frequently the pathological potentialities of this disease were not given due consideration. Since our troops have invaded in large numbers the malaria infested islands of the Southwest Pacific, many members of the medical profession, both with the troops and at home, have come to regard with deep concern the widespread damage frequently associated with a malarial infection. For this reason I am prompted to give a resume' of some of the ophthalmologic lesions encountered on a malarial island in the tropics. It is not to be assumed that all of the conditions encountered were due to malaria, but certainly the percentage of pathologic lesions of the eye was higher than one would expect under normal conditions. In spite of prophylactic measures, seventy-five per cent of all military personnel showed malarial parasites in the blood during the early periods of this particular invasion, and we feel inclined to attribute a large proportion of ocular disturbances to the toxins of malaria.

Ocular Manifestations of Malaria

The effect of malarial toxemia on intraocular structures is not a new observation, but probably has not before been as forcibly brought to the attention of the medical profession as in the present war.

Optic neuritis and malarial amblyopia[1] are at times associated with the disease, especially in the severe cases; however, the amblyopia has to be differentiated from that which is due to quinine. In quinine amblyopia the condition depends upon the retinal anemia resulting from the toxic spasm of the arterioles. Extreme pallor of the optic discs and contraction of the visual fields have been reported. This picture is in direct contrast to the hyperemic disc and retina associated with malarial toxemia. Malarial amblyopia occurs as a result of the action of the malarial toxin on the optic nerve and retina[2]. Loss of vision is usually only transient, but there may be complete blindness lasting several days or weeks or even months. Often optic neuritis and papillary edema result from the blocking of the retinal and choroidal vessels by parasites and leukocytes. Multiple hemorrhages are sometimes present. The retinal hemorrhages are usually small, multiple and peripheral; however, large macular hemorrhages do occur in the malignant types of malaria.

Paralysis of the abducens nerve and paresis of the vocal cord have been noted following malaria. Ulceration of the cornea is the most common ocular sequela of malaria, and associated with this keratitis there is frequently encountered a recurrent iritis. Supra-orbital neuralgia precedes the corneal lesions, which are described as simulating a herpes and later a form of superficial dendritic keratitis. Photophobia and lacrimation are characteristic signs and often precede the actual corneal lesions by days or even weeks.

Other Factors Contributing to Ocular Pathology in the Tropics

Dietary conditions are often very unsatisfactory in combat zones, particularly in island and jungle warfare. Lines of communication are difficult to establish and maintain, and supply lines are frequently disturbed. The question of dietary and vitamin deficiencies must therefore be considered.

Because of the increased and excessive use of tobacco under trying conditions, toxic amblyopia resulting from nicotine has been considered; however, this is thought to occur only in those individuals who have an idiosyncrasy.

Heat, humidity, glare, loss of sleep, and difficult living conditions doubtless influence metabolism, and may contribute to ocular as well as other pathology.

Ocular Lesions Encountered Among American Troops on a Tropical Island

Shortly after we arrived on a tropical island in the Southwest Pacific, the Eye, Ear, Nose, and Throat Clinic of a Station Hospital was established. From the beginning,

1. Strong, Richard P., Editor: Stitts' Diagnosis, Prevention and Treatment of Tropical Diseases, ed. 6, Philadelphia, Blakiston, 1942, vol. I, p. 76.

2. Ibid, p. 79.

it was evident that we were encountering a rather large percentage of cases of intra-ocular pathology of non-traumatic or non-specific origin. The group under observation were men between the ages of 20 and 30 years, who, in spite of fatigue and the usual diseases attendant to the climate and locality, should be considered reasonably healthy individuals.

Subjective Symptoms

When the clinic had been in operation for some time, it was obvious that many patients had suffered some depletion of the powers of accommodation and convergence, as was manifested by the complaints of reading difficulties, scotomata, and muscle imbalance, particularly exophorias. These conditions were at first ascribed to fatigue, climate, and nutritional deficiences; however, as the active combat subsided and conditions in general improved, the eye symptoms seemed to increase rather than decrease. Subjectively, the complaints were loss of vision, sudden or gradual, and usually unilateral; frequent headaches in occipital and temporal regions; dizziness; pain in the eyeballs; tenderness on palpation; photophobia; lacrimation; and large and small "spots" before the eyes, infrequently associated with nausea. A frequent complaint was a sudden "black-out" lasting from a few minutes to hours, followed by severe headache and diminished visual acuity.

Objective Findings

These subjective symptoms alone may be associated with fatigue, jaundice and many other conditions which are to be expected among combat troops in the tropics; but the objective findings are more significant. Among these findings were irregularity of the pupils; retinitis of the atrophic rather than the exudative type, usually in or around the macular area; unusual concentration of choroidal pigmentation; generalized hyperemia of the retina and nerve head; optic neuritis, both mild and severe; optic atrophy; and in a few cases a severe progressive choroidoretinitis and uveitis. Some of these patients complained only slightly of blind spots in both central and peripheral fields. Large scotomata about 5 to 7 degrees in width could be charted on the tangent screen surrounding or including the normal blind spot. Central and relative scotomata were frequent.

Clinical Course

In some patients who were hospitalized, marked and rapid loss of vision was noted in a few days. I have in mind 3 patients who were evacuated; they were admitted with a visual acuity of 20/40, and four to seven days later this had dropped to 20/100. All of these patients were admitted with a manifest patch of innocent looking atrophic retinitis, and within a very short while marked retinal and choroidal pathology was noted.

In cases in which a specific cause was found, such as syphilis or trauma, the old lesion was frequently activated, and rapid loss of vision followed. Most of the patients observed had essentially no refractive error and, under usual or normal conditions, would experience little or no visual difficulty. In a few cases in which substantial refractive errors were found, it was difficult to distinguish between the symptoms of asthenopia and intra-ocular pathology. If no objective pathology was found, the cases were listed as simple asthenopia; however, when some of these patients returned, a second examination did reveal pathology. We frequently found on this examination an atrophic retinitis or a mild optic neuritis; the visual acuity was lessened and scotomata were present. The symptoms of headache, blind spots and difficulty in reading were more exaggerated.

In all suspicious cases the patients were told to return in two weeks for further observation, and the progressive cases were immediately hospitalized. Because of the emergency need of bed space as a result of combat conditions, however, we were not able to keep these patients and study them as we would have liked. They were evacuated, and since my return to the United States, it has been my privilege to observe and follow up quite a few of these cases at a general hospital. I find that some of them now have a chronic uveitis.

Data Obtained

A history blank was prepared which gave us pertinent data that helped to classify and evaluate these cases. The following history is an example:

1. Length of stay in tropics—18 months.
2. Length of stay at A.P.O. 709—2½ months.
3. Length of atabrine administration—2½ mos.
4. Dosage weekly—7 grains.
5. Quinine therapy—None.
6. Sickness or disease last six months—Dysentery, epidermophytosis both feet; admitted for latter.

7. Present symptoms—Eyes sore, difficulty in focusing, blind spots
   (a) Pupils—Right larger, reaction to light poor
   (b) Retinae—Retinitis, O.U., mild, atrophic in temporal quadrant
   (c) Maculae—Involved, O.U., hyperemia
   (d) Optic nerves—Normal
   (e) Vitreous—Muscae
   (f) Refraction—Plano—Vision: O.D. 20/30, O.S. 20/20
   (g) Others — Central relative scotoma; enlarged blind spots
8. Diagnosis—Retinitis, O.U., mild, atrophic, macular area.
   (Patient kept under observation after discharge from hospital. Vision O.U. 20/30 when last seen.)

The following data were collected from 1,000 cases seen in the Eye Clinic of the Station Hospital on the island from February 1, 1943 to October 15, 1943:

Simple refractions	570
Strabismus	4
Kerato-conjunctivitis	5
Hordeola	20
Chalazion cysts	27
Pterygia	32
Conjunctivitis, acute and chronic	80
Dacryocystitis	5
Nystagmus	4
Foreign bodies (corneal and conjunctival)	37
Corneal ulcers	20
Keratitis, acute and chronic	15
Interstitial keratitis	3
Chorioretinitis, mild and severe	49
Optic neuritis, mild and severe	20
Retinal hemorrhage	6
Optic atrophy, secondary	10
Optic atrophy, primary	4
Iritis, acute and chronic	15
Papillary edema	10
Glaucoma, acute congestive	2
Glaucoma, chronic	1
Vitreous opacities without demonstrable pathology in retina or choroid	5
Uveitis, acute and chronic	5
Miscellaneous examinations	51

Injuries and operations incident to actual combat were not included in this group.

We observed from the histories that the majority of these patients with intra-ocular pathology had been in the tropics for three months or more. It is significant that the pathology was of the type which is produced by some toxic agent or agents. The percentage of retinal and optic nerve pathology is higher than one would expect to encounter in this group of supposedly healthy individuals.

A large percentage of these patients showed blood smears positive for malaria and, as was noted in the preliminary discussion, we know that eye symptoms and pathology frequently result from malarial toxicity.

Conclusion

Malaria, a disease rather widespread in certain parts of the United States, is often too little considered from the standpoint of potential, seriously disabling pathology. Ocular lesions as a sequela to malarial infection should always be borne in mind. Such ocular complications as optic neuritis, amblyopia, keratitis, retinal hemorrhages, chorioretinitis, and cranial nerve involvement should be diagnosed early and given adequate treatment and repeated examinations over a long period of time.

Author's Note: I am very much indebted to Sgt. Gilbert Poss, M.S., for his valuable aid in helping to collect and correlate this data.

THE RESULTS OF THORACOPLASTY FOR PULMONARY TUBERCULOSIS AT THE WESTERN NORTH CAROLINA SANATORIUM

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ASHEVILLE
and
S. M. BITTINGER, M.D.
BLACK MOUNTAIN

In November, 1937, the Western North Carolina Sanatorium opened its doors. By April, 1944, thoracoplasty had been performed on 187 patients by the senior author (J.A.M.), assisted by the various members of the staff—namely, Drs. Bittinger, Ormond, Woods, Spence, Burge, Jernigan and Nailling.

An analysis of these cases has been undertaken in an effort to determine the results of the procedure and to add our experience to the rapidly accumulating evidence for the value of thoracoplasty in the treatment of pulmonary tuberculosis.

Type of Operation

In most cases, the modern type of operation was done, long lengths of ribs being removed, together with the transverse processes of the vertebrae. As many ribs were removed, in stages, as was necessary to close the cavities and collapse the diseased area. As a rule, an effort was made to obtain a selective collapse and to save as much functioning lung as possible.

In addition to the posterior resection of

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TABLE 1.

No. Patients	Male	Female	Average Age	Diagnosis			Side Operated		
				Mod. Adv.	Far Adv. B	Far Adv. C	Rt.	Left	Bilateral
187	82	105	33 yrs.	7	57	123	77	109	1

TABLE 2.

No. Patients	No. Stages	Operative Deaths	Operative Mortality		Late Deaths in San.	Total Mortality per Patient	Sputum Converted	Deaths After Leaving San.
			Per Stage	Per Patient				
21 Patients with Unilateral Disease								
21	57	0	0	0	0	0	20 (95%)	0
18 Cases Complicated by Tuberculous Empyema								
18	54	1	1.9%	5.5%	2	3 or 11%	14 (77%)	0
27 Patients with Pneumothorax on Contralateral Side								
27	70	5	7.1%	18.5%	0	5 or 18.5%	15 (55%)	0
121 Patients with Bilateral Disease—Contralateral Lung Quiescent or Arrested								
121	330	9	2.7%	7.4%	0	9 or 7.4%	98 (80%)	5
TOTALS								
187	511	15	2.9%	8%	2	17 or 9%	147 (78%)	5

ribs, we have found it necessary to do an anterolateral costectomy on 35 patients. In 37 cases an apicolysis was done as a part of the first stage. In 14 patients a portion of the scapula was removed, because when only six or seven ribs are removed, the tip of the scapula may impinge on the next normal rib and produce pain. This operation was done after the thoracoplasty, or at the time of the second stage. We do not believe it is a good procedure. Several of the patients complained of more pain after the scapula was removed, and it increases the deformity without improving the results. We now prefer to remove an extra rib.

We try to individualize each case and plan the operation accordingly. In several patients who had marked retraction and small cavities, the Sauerbruch type of operation was done, with excellent results. We do not believe that apicolysis is indicated as a routine procedure, and we use it only for the large apical cavity, or for the cavity with its mesial wall in the costovertebral gutter. Not infrequently we have had to revise the thoracoplasty after the operation has been completed. Several patients who had a partial thoracoplasty done have returned with a spread of the disease below the collapsed area and have had to have additional ribs removed. We have learned that we cannot tell beforehand how many ribs will have to be removed to accomplish the desired results.

Anesthesia

We believe that the expertness of the anesthetist is a very important factor in reducing the mortality rate of this operation. To all our patients, the anesthetic has been administered by Dr. Arthur Ambler. The majority have been given cyclopropane with avertin as a basal anesthetic. A few have been given cyclopropane without basal anesthesia, and several have been given sodium pentothal. We believe that the combination of avertin and cyclopropane is the best anesthetic for these patients.

Complications

The management of the complications that may occur is another factor in reducing mortality. In 75 operations, the patients have shown varying degrees of shock following the procedure. The majority responded to the administration of glucose and saline intravenously. In a few, acacia solution was used. Lately, blood plasma has been employed. No patient has died of shock, and we do not feel that it is necessary to give transfusions routinely.

Wound infection has occurred after 51, or 10 per cent, of the operations. In 20 cases the infection was classed as major, and in 3 of these it was tuberculous. Two patients died as a result of the wound infection. In the remaining 31 cases the infections were minor in nature and did not seriously affect

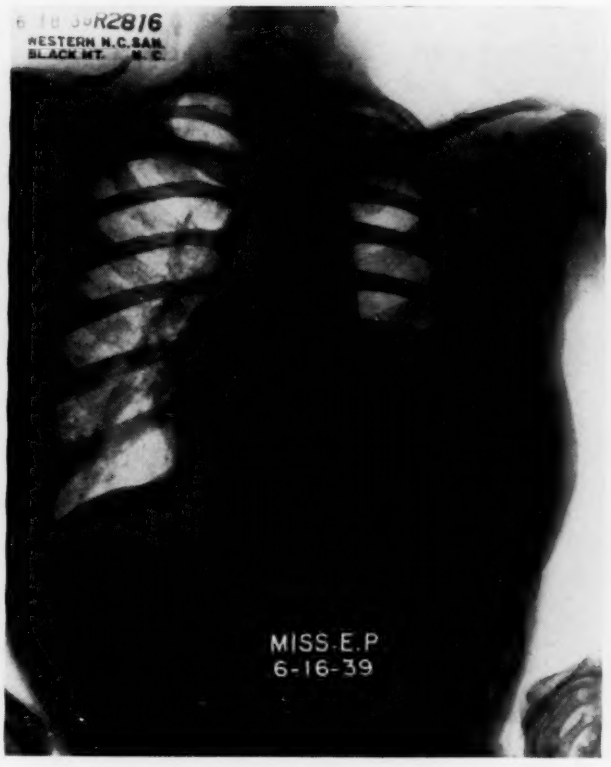


Fig. 1. Miss E. P., aged 22. This patient had been ill three years. She had had bed rest, phrenic neurectomy, and left artificial pneumothorax complicated by tuberculous empyema.

Fig. 2. Miss E. P. A four-staged thoracoplasty was done in 1939, nine ribs being removed posteriorly and six ribs anteriorly. She is well and working.

the patient or the results of the operation. During the past four years we have instilled sulfanilamide into the wound, and the rate of infection has been cut to 5 per cent. In only one instance during this time has the infection been serious.

The most serious complication has been a spread of the disease. This has occurred after 26 operations, or in 5 per cent. It has resulted in the death of 11 patients—65 per cent of the deaths in this series. If the patient did not die, the operation had to be either delayed or abandoned. In most of the patients, we feel that the spread of the disease was due to autotuberculinization. In some, it may have been due to aspiration of sputum into the lower bronchi or the bronchi on the other side. In those patients who have large quantities of sputum, we now aspirate the sputum by means of a bronchoscope at the end of the operation.

Four of the patients died from cardiac failure. All of them were patients who had been ill a number of years and were not good risks. It is not always possible to appraise the circulatory system in patients chronically ill with tuberculosis. Even the electrocardiogram will not tell you which patient will and which will not stand the operation. We believe it is a good practice to get these patients out of bed before the operation and between stages in order to improve their circulation.

Immediate Results

The immediate results we have obtained compare favorably with those of other clinics. In table 1 is presented the general analysis of the 187 cases. We have further divided them into four groups. As is shown in table 2, a total of 511 operations were done on 187 patients, with an operative mortality of 2.9 per cent per stage, or 8 per cent per patient. Two additional patients died later of tuberculosis while in the Sanatorium, making a total mortality of 9 per cent. In 78 per cent of the patients the sputum was converted from positive to negative. Several more who have recently been operated on will fall into that group. In 13 per cent of the patients the sputum remained positive and the results were not considered good, although most of the patients were definitely improved.

The mortality rate and the results obtained depend largely upon the extent of the disease in the patient. On 21 patients who had strictly unilateral disease, 57 operations

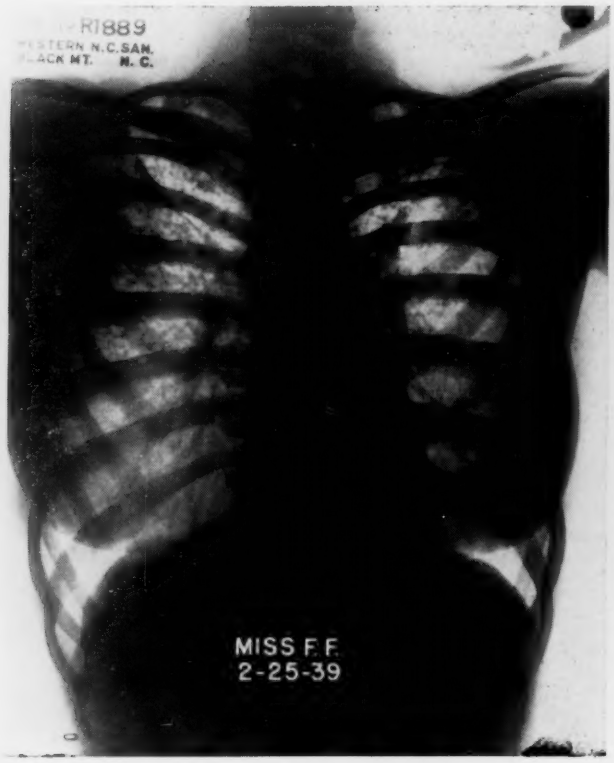


Fig. 3. Miss F. F., aged 25. She was admitted with bilateral tuberculosis, far advanced (C). Bed rest was given, and pneumothorax started on the right. A left temporary phrenic neurectomy was performed in April, 1939, a left permanent phrenic neurectomy on September 6, 1940.

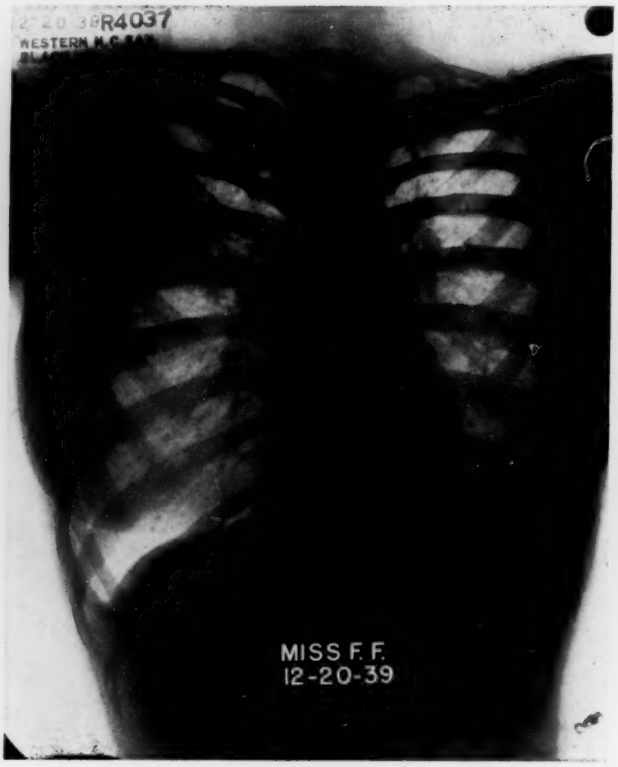


Fig. 4. Miss F. F. The right lung is quiescent under partial pneumothorax. The left lung shows a small cavity at the left apex.

were performed without a single death, and 95 per cent of the cases were considered arrested. The one patient who still has a positive sputum had endobronchial tuberculosis and bronchiectasis. Later a lobectomy and a revision of her thoracoplasty were done, and I believe that she will eventually be cured (fig. 1 and 2).

There were 18 patients who presented the complication of tuberculous empyema with or without mixed infection. On these, 54 operations were performed with an operative mortality of 1.9 per cent per stage, and 5.5 per cent per patient. Seventy-seven per cent of these were cured.

There were 27 patients who had bilateral disease and whose contralateral lung was partly collapsed by pneumothorax. In this group, 70 operations were performed, with an operative mortality of 7.1 per cent per stage, and 18.5 per cent per patient; in only 55 per cent was the sputum converted (fig. 3 4, and 5).

In 121 patients with bilateral disease, the contralateral lung was considered quiescent or arrested. On these patients, 330 operations were performed with an operative mor-

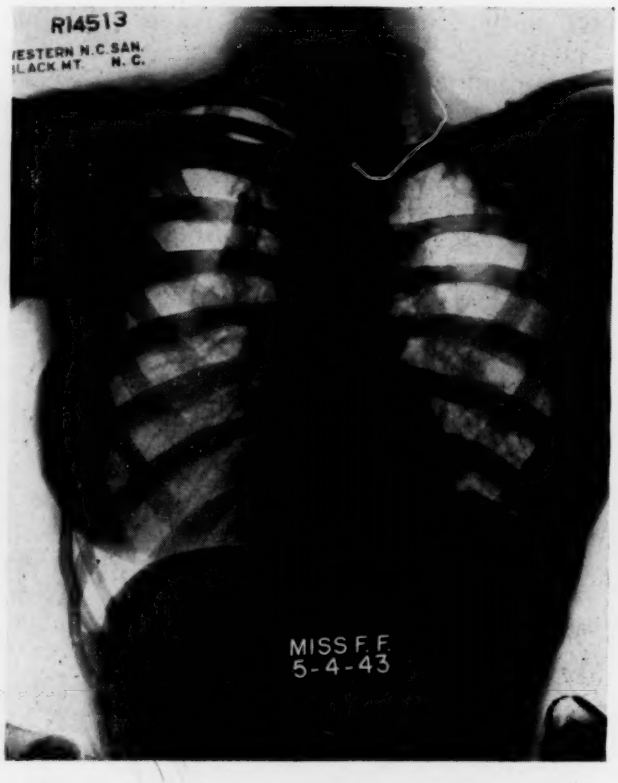


Fig. 5. Miss F. F. A three-staged thoracoplasty was done, five ribs being removed posteriorly and three anteriorly. The patient is well and working as a laboratory technician, but is still taking pneumothorax on the right side.

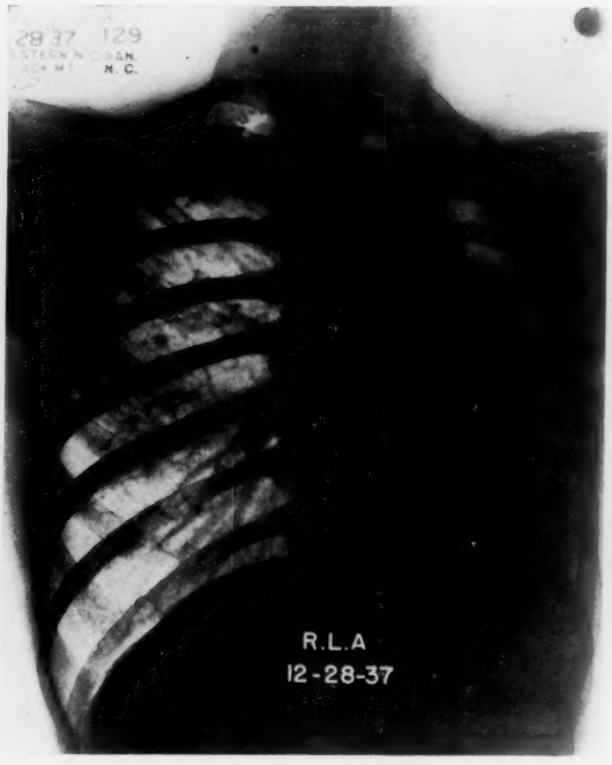


Fig. 6. R. L. A., aged 28. This patient had been ill nine years on bed rest. The right lung was quiescent.

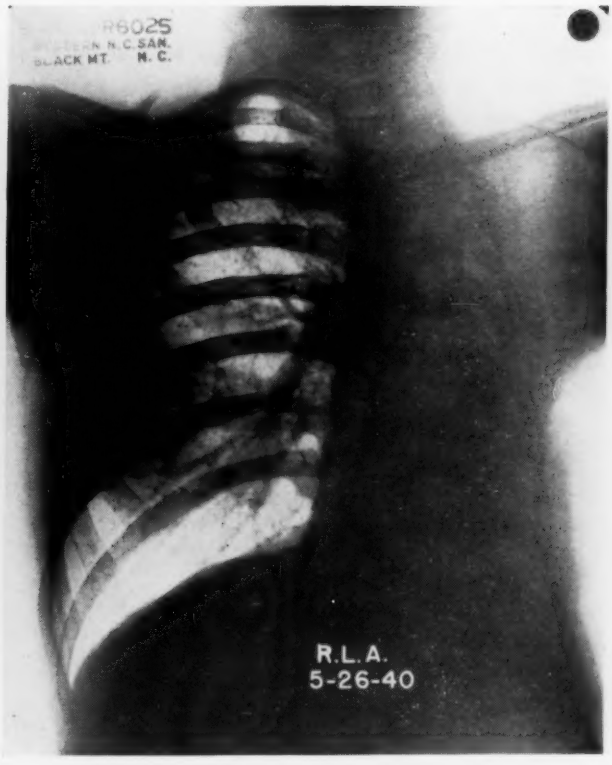


Fig. 7. R. L. A.—A three-staged thoracoplasty, removing ten ribs, was performed in 1937. The patient is still well and working.

tality of 2.7 per cent per stage, or 7.4 per cent per patient. In 78 per cent, the sputum was converted from positive to negative (fig. 6 and 7).

Undoubtedly, these results could be improved if we limited the operation to the ideal risks. Our custom has been to perform the operation whenever there was a reasonable chance for success, and we have not turned down the bad risks. Unquestionably, this practice has increased the mortality rate and reduced the percentage of good results. On the other hand, quite a few badly diseased patients have been restored to health and usefulness who otherwise would be bedridden or dead.

Present Status of Patients

While the above figures show that the immediate good results are around 80 per cent, we feel that the late results are more important in establishing the value of thoracoplasty. It is not enough to render a patient's sputum negative. We should restore the patient's health so that he can resume work and make a living. If we succeeded only in prolonging a patient's invalidism and economic dependence on someone else, we do not think the operation would be worth while.

With that idea in mind, we have determined the present status of the 187 patients (table 3). The whereabouts of 4.2 per cent of the patients are unknown. Five more have died since leaving the sanatorium, making a total mortality of 11.6 per cent. Thirty and five-tenths per cent of the original 187 are improved, and 42.2 per cent are well and working. It is too early to establish the late results in many of these cases, because they have been operated on too recently. We think it is safe to assume that the majority of the improved group will eventually return to work. We can conservatively estimate that 70 per cent will eventually be well and working.

Conclusion

No other form of collapse therapy gives better results than does thoracoplasty. Pneumothorax is considered the ideal method of collapse for pulmonary tuberculosis, but it leaves much to be desired. The complications of pneumothorax are frequent and the results are not always happy. We consider a satisfactory pneumothorax far preferable to thoracoplasty. However, we believe that thoracoplasty gives the patient a much better chance for cure than does an unsatisfactory pneumothorax. The only reason we

TABLE 3.

PRESENT STATUS

No. Cases	*Sputum Neg.*	*Sputum Pos.*	*Improved*	*Well & Working or Able to Work*	*Unimproved*	*Dead*	*Unknown*
Unilateral Disease							
21	20	1	5	15	1	0	0
Empyema							
18	14	1	6	8	1	3	0
Pneumothorax on Contralateral Side							
27	15	7	13	7	2	5	0
Bilateral Disease—Contralateral Lung Quiescent or Arrested							
121	86	12	43	49	7	14	8
TOTALS							
187	135 72.2%	21 11.2%	67 30.5%	79 42.2%	11 5.8%	22 11.6%	8

have not performed thoracoplasty earlier in the course of the disease is that too many of our patients enter the sanatorium with far advanced bilateral disease.

The group of patients that we have presented have all been treated previously by bed rest and one or more methods of collapse therapy. Many of them have had several remissions of the disease and several admissions to this or another sanatorium. Thoracoplasty was the last resort for most of them. In this group of patients with far advanced disease, we have restored approximately 70 per cent to useful lives.

Abstract of Discussion

Dr. James F. O'Neill (Winston-Salem): Gentlemen, Dr. Moore asked Dr. Bradshaw to discuss this paper today. Dr. Bradshaw is unable to be present, and has asked me to speak in his place.

Dr. Moore's ideas concerning thoracoplasty in the treatment of tuberculosis differ from ours only in minor details. Dr. Moore has obtained excellent results.

We might do well to change our attitude concerning the treatment of tuberculous patients in sanatoria. We try to wipe out tuberculosis by early diagnosis, yet on the other hand there are many people who are chronic invalids in their own homes as a result of far advanced tuberculosis. These patients are infecting other individuals, and sanatoria are reluctant to admit them because they take up beds for an indefinite period. We certainly think that in that type of patient thoracoplasty is indicated. Obviously, the more surgery is employed in the treatment of tuberculosis the more likely are institutions for the treatment of tuberculous patients to change from the status of sanatoria to the status of chest hospitals.

Many types of intrathoracic diseases are referred to the physicians in sanatoria for diagnosis. In the differential diagnosis of chest lesions tuberculosis must always be ruled out. If the patient is not suffering from tuberculosis every effort should be made to find out what is the underlying etiologic agent. If we consider tuberculosis sanatoria more in the nature of chest hospitals, I think the patients would get more extensive study, and our general knowledge concerning chest diseases would be considerably advanced.

Dr. Moore mentioned the question of transfusion in thoracoplasty operations. As a general rule we do not feel a transfusion is necessary, but we always have plasma available. We have no statistics on what percentage of our patients develop circulatory failure as a result of the operation. It is our impression that it has been infrequent and of a minor nature.

We are using cyclopropane and oxygen anesthesia exclusively. We have not yet used avertin or sodium pentothal.

We note that Dr. Moore has been using sulfanilamide in wounds. We have not used this and so far we have not seen fit to use ultra-violet radiation of the operating rooms.

In comparing results we have based our statistics on 93 operations performed on 38 patients. In these patients all thoracoplasties were completed. Of the 38, 6 died either as a result of the operation, or from progression of the disease. Sixteen patients have been discharged with negative sputum. Sixteen patients are still in the sanatoria, and of these, 12 will probably be discharged with negative sputum. In our group 28 patients out of 38 have had, or probably will have sputum conversions—a percentage of 73.6 against Dr. Moore's 78. The incidence of wound infections in our series has been 7.2 per cent against Dr. Moore's 5 per cent. Our mortality rate has been 12.5 per cent against Dr. Moore's 9 per cent. Postoperative wound hemorrhages occurred in 1.8 per cent of our cases, and postoperative spread of the disease in 9 per cent. The average figure for postoperative spread of tuberculosis after thoracoplasty gleaned from the literature is approximately 4.6 per cent.

Dr. Moore has been working in North Carolina much longer than we have, and he has done a great deal more work. His statistics and results are excellent, and we would like to congratulate him.

The family physicians can, if they will, do a better job of suspecting and watching the prospective new cases of tuberculosis year in and year out than any other conceivable agency. Hoyt E. Dearholt, M.D.

COMMENT FOLLOWING MOVIE ON CONTINUOUS CAUDAL ANALGESIA IN OBSTETRICS

ELEANOR BEAMER EASLEY, M.D.
DURHAM

I am among those obstetricians who feel that the advantages of caudal analgesia outweigh its disadvantages. Even those who are opposed to its use concede the excellence of the results that can be obtained with it *under ideal conditions.* On the other hand, most advocates of this method are, like myself, aware of its dangers and disadvantages. Since the film has presented the subject favorably, I intend to talk chiefly about the difficulties encountered with the method.

The additional time required has been the factor which has limited my use of the method. The suddenness with which serious complications can arise makes me unwilling to start a case and take the responsibility for it, unless I can be constantly in the same building with the patient.

According to some of the published reports, disasters have been due to inadequate supervision or errors of technique. These difficulties are not insurmountable. The real controversy at the present seems to be centered around the question as to whether or not there are dangers in the use of the method which no amount of skillful handling will reduce to a reasonable limit.

Several of the published reports of accidents have been particularly thought provoking. Among these is the report by Diddle and Hill[1] of a fatal pulmonary embolism arising from a thrombosed vein in the sacral canal. No amount of expertness or care can eliminate the possibility of trauma to the veins of the sacral canal, with the attendant chance of thrombosis and embolism. Since this accident has been reported only once in more than 10,000 cases[2], it must happen rarely or else be unrecognized. The authors brought up the question as to whether or not the subsequent ether anesthesia used was a contributory factor. They described "moderate resistance" to the induction of the anesthesia, which required ten minutes. Batson[3], from his studies of the vertebral system of veins, believes that increased pressure within the abdomen is transmitted from the abdominal veins to the vertebral veins, causing increased venous flow through the vertebral system. It seems unlikely that the struggles resulting from an ether induction would raise the pressure within the system more than would voluntary expulsive efforts, which we have not in the past hesitated to encourage in patients under caudal analgesia.

Perhaps it is unwise, when caudal analgesia is used, to allow attempts at spontaneous expulsion. In the absence of disproportion, and with effective labor pains (most obstetricians insist on these conditions), the presenting part almost invariably descends to the perineum, where any operation to complete delivery is relatively simple. Outlet forceps are usually necessary, but because of the excellent relaxation, I have found lacerations and extensions from episiotomies less frequent with caudal analgesia than with other forms of anesthesia. I agree with Dr. Clifford Lull[4] of Philadelphia that rotations from the transverse or posterior positions are much easier because of this relaxation.

Fetal distress, presumably due to anoxia, has been reported when the maternal blood pressure goes below 90 systolic. Lowering of the blood pressure, sometimes precipitous and prolonged, has been observed by most people using caudal analgesia, including ourselves. Usually this has been without serious results. Irving[5] last year and McCormick[6] this year, however, have attributed the loss of babies to this anoxia. The pathogenesis of alarming drops in blood pressure is still a matter of dispute, but anyone who uses the method should be prepared to deal with them by giving the mother oxygen and taking steps to raise her blood pressure.

Although there is agreement as to many of the rules for the administration of caudal

Read before the Section on Obstetrics and Gynecology, Medical Society of the State of North Carolina, Pinehurst, May 3, 1944.

1. Diddle, A. W. and Hill, A. M.: Pulmonary Embolism During Continuous Caudal Anesthesia, West. J. Surg. 51:427-431 (Nov.) 1943.
2. Hingson, Robert A. and Edwards, Waldo B.: Continuous Caudal Analgesia, J.A.M.A. 123:538-546 (Oct. 30) 1943.
3. Batson, O. V.: Function of the Vertebral Veins and Their Role in the Spread of Metastases, Ann. Surg. 112:138-149 (July) 1940.
4. Lull, Clifford B.: Some Observations on the Use of Continuous Caudal Analgesia, Am. J. Obst. & Gynec. 47:312-326 (March) 1944.
5. Irving, Francis R., Lippincott, C. A. and Meyer, F. C.: Continuous Caudal Anesthesia in Obstetrics, New York State J. Med. 43:1028-1029 (June) 1943.
6. McCormick, C. O., Huber, C. P., Spahr, J. F. and Gillespie, C. F.: An Experience with One Hundred Cases of Continuous Caudal Analgesia, Am. J. Obst. and Gynec. 47: 297-311 (March) 1944.

analgesia, some of the minutiae—such as if, when and how to give ephedrin or epinephrin—have yet to be worked out. Block's[7] new needle with a catheter-like blunt tip and side openings is an example of a small change in equipment which may make a big difference. Sometimes the margin between epidural and intravenous or intrathecal injection does not amount to more than a millimeter. I am always afraid that the tip of the needle may move when the mother turns over or is transferred from the bed to the delivery table. Several times I have seen evidence of intravenous spill when an injection was given just after the patient had been moved.

Experiences in 100 Cases

The use of continuous caudal analgesia has been attempted in Durham in 100 cases. These cases represent the beginning efforts of ten different people—nine house officers of Duke and Watts Hospitals, and myself. Three of us are responsible for three fourths of the cases. A third of our cases were failures. In 16 the needle could not be properly placed in the sacral canal. In 5 analgesia was attempted too early or too late. Three times the question was raised as to whether spinal fluid had been obtained, and, rather than take a chance, the injection was discontinued. Six times a partial analgesic effect was obtained; the cause for this was uncertain. Once there was a blood clot in the tubing. Once the apparatus was upset and contaminated. Among the different operators the percentage of failures decreased as experience increased.

In spite of our inexpertness, clearly demonstrated by the high percentage of failures, there were no serious accidents due to caudal analgesia. There were, however, 6 cases in which the maternal blood pressure fell to shock level. Four of these were patients with toxemia and hypertension. Slow fetal heart tones were recorded in most of these, but all the babies were entirely normal.

There were 4 fetal deaths and 1 maternal death from causes unrelated to the caudal analgesia. One mother with anemia and toxemia died of heart failure. Two babies died because of prematurity. In one breach presentation the baby was lost as the result of prolapse of the umbilical cord. One baby died of intrauterine sepsis during the course of a fifty-six hour labor with ruptured membranes.

There was one broken needle, which was easily recovered. There were no infections, and no patients with residual damage due to the analgesia. In fact, my impression is that the postpartum results have been definitely better in the caudal group. Lull[4] and Irving[5] have noticed decreased perineal damage in their patients. I agree with this finding and believe also that there is less cervical damage.

Unfortunately the method works best for those who need it least—the normal patients who are having rapid, uneventful labors. I have also found it valuable when used for a few hours during a greatly prolonged labor to allow an exhausted mother to rest without decreasing the effectiveness of her uterine contractions.

Abstract of Discussion

Dr. Frank R. Lock: Dr. Easley has presented this subject in a very fair and unprejudiced way. I do not believe, however, that she emphasized enough the training necessary to the successful use of the method. The method certainly should not be used under any but ideal conditions. We feel that the equipment absolutely necessary to meet any emergency which may arise includes a blood bank and an adequate anesthesia staff, in the event that the patient may have circulatory or respiratory failure. Fortunately we have had to call upon these people upon only one occasion. This patient, the first one of our series, required artificial respiration. The problem in this case was due to defective equipment.

Skill, safety, and the percentage of success increase with the experience of the operator. With any degree of experience, however, it is still a technically difficult procedure. The film gives the impression that it is a very easy injection; this certainly is not true.

There is one point that I think is important. It is a well known fact that barbiturates are the antidotes for novocaine poisoning. For that reason we give a very small dose of barbiturate before we begin the caudal anesthesia—usually 2 grains of sodium phenobarbital subcutaneously or 3 grains of phenobarbital by mouth. In this way the individual's resistance to novocaine poisoning is enormously increased, and the toxicity of the anesthetic agent is proportionately reduced. Since we began to do this we have not seen any falls in blood pressure, or any reaction that we considered at all significant.

Excellent judgment is necessary in the selection of the time for the administration of this anesthetic. If it is begun too soon, although it does not interfere with the progress of labor, I think that there are positive dangers in the exposure of the nerve tissue to an anesthetic agent of this type for a prolonged period of time. We have had no definite evidence of this, but it is suggested.

Another danger is that of infection of the caudal space, with the possibility of extensive damage to the nerves of the caudal canal, particularly those which control bladder and bowel. If infection occurs, we may give back to the world a patient who has permanent impairment of these functions.

7. Block, Nathan: Further Studies with Continuous Drip Caudal Anesthesia. Am. J. Obst. and Gynec. 47:331-334 (March) 1944.

THE PHYSIOLOGICAL BASIS OF TREATMENT IN SHOCK AND HEMORRHAGE

JOHN H. FERGUSON, M.D.
CHAPEL HILL

The medical services of our armed forces are achieving unparalleled success in the treatment of hemorrhage, shock, and infections. From the viewpoint of a physiologist long interested in blood research, and largely in the role of a reporter of things seen and heard at a number of leading medical centers, I would like to try to tell you something about the progress made towards a scientific understanding on which to base the treatment of hemorrhage and shock.

The fundamental physiological difficulty in these conditions is the incapacity of the circulation to supply the tissue needs. In the face of this emergency, major calls are made upon the mechanisms of adjustment, and the more vital functions often have to be maintained at the expense of what we may call the "luxury" functions, important as many of these are for the everyday processes of life. When the mechanisms of adjustment are taxed to the limit, there is imminent danger of breakdown leading, as the result of accumulating deficits, to a "vicious circle." It is to prevent and thwart these dangerous circulatory failures that modern medical science steps in with the weapons of transfusions and auxiliary measures which will be suggested by the remarks to follow.

Physiology of the Circulatory System

The great role of the circulating blood is to provide what Claude Bernard (1878) called the "inner environment" for the body cells. The medium by which this role is accomplished is the effective tissue fluid circulation, maintained by the capillaries. The fluids must pass through the thin-walled endothelial cells. Incidentally, these cells can contract, as I have demonstrated by stimulating one of them with the microdissection needle.

Starling[1], Landis[2] and others have explained the pressure factors operating in a typical capillary. The "gradient" of hydrostatic pressure maintains the blood flow from arterial to venous end. It also tends to force fluids through the thin-walled capillaries out into the tissue spaces. This "filtration force" is opposed by the relatively constant colloidal osmotic pressure of the plasma proteins, provided that the normal semi-permeability of the capillary wall is maintained. At the arteriole end, the hydrostatic pressure exceeds the colloidal osmotic pressure and fluid leaves the vessel. At the venule end, the pressure difference is reversed, and fluid is actually passing back from the tissues into the circulating blood. Normally the outflow and return of fluid are in balance. Such a system is sensitive to imbalance in (1) the blood pressure gradient, (2) the colloidal osmotic pressure, as determined by the plasma protein level, and (3) the semi-permeability of the vessel wall. Above all, an adequate flow of blood must be kept up to ensure the smooth operation of the filtration mechanism. (1) Insufficient blood supply and (2) capillary stagnation and impaired venous drainage are equally responsible for upsetting the equilibrium of tissue fluid flow and the nutritional exchanges between blood and tissues.

The Physiological Effect of Hemorrhage

Let us apply these ideas to hemorrhage. Any severe bleeding will reduce the blood volume, so that insufficient blood is returned to the heart to enable it to maintain the blood pressure and to pass on a full blood supply to all the tissues. The first reaction of the body is a widespread vasoconstriction (chiefly in the "luxury" areas), brought about by carotid sinus reflexes and other mechanisms. The chief vasoconstrictors are the sympathetic nerves and the adrenalin poured out from the suprarenal glands. Thus the blood is redistributed, to keep up as good a supply as possible to essential organs such as the brain, heart, and lungs. Except with minor bleedings, this simple response is not adequate to maintain the blood pressure. The lowering of the blood pressure gradient by even 1 mm. in the capillary areas upsets the balance of filtration. Less fluid passes out at the arteriole end and more returns at the venule end. Thus the blood volume is partly sustained by drawing upon the "reserve" of tissue fluid. Since it is only water and salts which are thus drawn upon, the

Read before the First General Session, Medical Society of the State of North Carolina, Pinehurst, May 2, 1944. From the Section on the Practice of Medicine.

From the Departments of Physiology and Pharmacology, University of North Carolina, Chapel Hill.

1. Starling, E. H.: The Fluids of the Body, London, Constable, 1909.
2. Landis, E. M.: Capillary Pressure and Capillary Permeability, Physiol. Rev. 14:404-481 (July) 1934.

adjustment is made at the cost of diluting the blood. This lowers the colloidal osmotic pressure and limits the effectiveness of the adjustment. Moreover, the tissues become dehydrated and the tissue fluid flow may be inadequate for normal nutrition. Obviously, we can do some good in hemorrhage with immediate intravenous infusion of physiological saline solution. This will temporarily increase the effective blood volume and will lessen tissue dehydration. But it further dilutes the blood colloids and is rapidly lost into the tissue spaces, so that the benefits are not sustained. If colloids, preferably in the form of plasma or plasma substitutes, are given, the benefits will be greatly extended. Once the emergency is past, the recovery processes will be initiated, and may be expected to continue, with rest, adequate diet, and general measures.

There is, of course, the anemia complication. We have a considerable "reserve" of red cell function but, for any major hemorrhage, transfusion with compatible whole blood is certainly the ideal. The modern blood bank and transfusion service increase the availability of whole blood transfusions. In addition to the four classical blood groups, we now test also for the Rh-factor. A, B, and anti-Rh test sera are currently being prepared in the form of stable dry powders at the Harvard Human Plasma Fractionation Laboratory. Dr. Witebsky[3], of Buffalo, has powerful agglutinin-neutralizing substances which make blood, especially type 0 blood, safer for transfusions. In isolated areas, or at the battle fronts, whole blood transfusions are not practical. Whole blood does not keep or transport well. We do not have to worry about blood groups in giving plasma or serum. Thus plasma transfusion is the practical life-saving measure in the front line. Thanks to air transport, it is now possible to return the casualty to a base hospital in a remarkably short time, and there he can be given more adequate treatment.

Unfavorable cases of hemorrhage go on into shock and the problem merges into that which is common to the shock syndrome, whatever its multifarious causes.

Recent Studies in Early Shock

In my recent observations of some very important clinical studies at Bellevue Hospital, in which a large group of workers from Columbia and New York University are cooperating magnificently, I learned of some extremely interesting techniques and results, particularly with reference to the early phases of shock. This work has been published by Dr. D. W. Richards as the February Harvey Lecture[4]. I shall discuss some of these data, but will not have time to go into technical detail or to do more than summarize a few of the high points.

In addition to normal controls and cases of trauma without shock, cases were divided into (1) traumatic shock, (2) hemorrhage, (3) abdominal shock, and (4) burns. In all cases—and I must emphasize that these data were obtained within a few hours of onset—the primary disturbance was a marked reduction in the venous return and hence in the "effective" circulating blood volume. Despite the body's compensations, this led to a distinct fall in the blood pressure (recorded from the femoral artery). In hemorrhage, we have a sufficient explanation for this disturbance, in the loss of blood volume; but what about the other cases?

The rather surprising finding of hemodilution in the hematocrit readings from trauma cases suggests either (1) that obscure hemorrhage plays a significant part in the picture, as suggested by the New York workers, or (2) that there is a coincidental vasomotor failure, with stagnation of the blood in certain regions. This idea was suggested to me by Dr. Moon, in Philadelphia, but I do not have time to go into the *pros* and *cons*. We ordinarily think of vasomotor failure as something temporary, like a faint; but Dr. Moon's suggestion raises the possibility that lesser degrees of failure to balance the circulation (not enough perhaps to cause initial loss of consciousness) may operate over a longer period of time and lead to deficits which become progressive, until true or "secondary" shock supervenes.

As has been pointed out by the New York workers, however, it is not necessary to postulate actual vasodilatation, which would be implied by vasomotor failure. Rather, the excessive vasoconstriction in such areas as the skin and splanchnic regions may cause tissue anoxia and cell damage. The pallor of the skin is an obvious example of the adreno-sympathetic response. It is not rational to expect much help from vasoconstrictor drugs when there is evidence that

3. Witebsky, E., in Mudd, S and Thalhimer, W.: Blood Substitutes and Blood Transfusions, Springfield, Ill., C. C. Thomas, 1942, chap. 32.

4. Richards, D. W., Jr.: The Circulation in Traumatic Shock in Man, Bull. N. Y. Acad. Med. 20:363-393 (July) 1944.

the body is not only responding by vasoconstriction but, in some cases, is carrying this response too far. In the kidney, for example, the blood may be reduced to one twentieth of normal. Thus, to lowered blood pressure and renal blood flow there may be added deficient oxygen supply, so greatly reducing the functional capacity of this vital excretory organ that nitrogenous wastes may accumulate and the patient may die in uremia. Similar functional disturbances may develop in other organs, especially the brain, liver and lungs. Some patients develop acute pulmonary edema.

I am not going into the vexed question of whether there is a "toxic factor" in shock, but I do want to stress the importance of tissue anoxia. In cases of hemodilution, such as hemorrhage and traumatic shock, there is loss of oxygen transport because of the anemia (or oligocythemia, to be more scientific). Saline and plasma transfusions may even aggravate this. Further there may be deficient aeration of blood in the lungs. The New York data clearly show that the oxygen consumption of the tissues is reduced. This is part of the "vicious circle" of poor blood supply ⇒ tissue anoxia ⇒ damage to cells ⇒ more anoxia. It means that the cells cannot even get the full benefit of such oxygen as can be supplied.

Therapy of Shock

The suggestions as to therapy are clear. Oxygen inhalation has a definite place during the period of blood replacement. In all cases where there is anemia (or hemodilution, as shown by the hematocrit) red cells should be supplied. In some instances, there is a definite advantage in using saline suspensions of red cells, rather than whole blood, because of the greater viscosity of the latter. This viscosity adds to the burden of the heart, which is trying to force blood through vascular channels, many of which are narrowed by the compensatory vasoconstriction.

This brings us to the point of the increased peripheral resistance. The significant rise in resistance to blood flow is partly due to the widespread vasoconstriction. Other and more important factors include the increased viscosity of the blood in cases such as burns and abdominal shock, where there is early capillary damage and leakage of plasma proteins, resulting in hemo-concentration. Moon[5] emphasizes that the "capillary-leakage" factor is present in all shock cases, but the current data argue against its operation in early cases of traumatic shock. It takes time for capillary damage to develop in some shock cases, and it is possible that it may be aborted by transfusion therapy.

As the cutaneous vasoconstriction in shock is protective, it must not be broken down by undue warming of the patient or by vasodilator agents, among which alcohol is the chief offender. We must not go to the extreme of undue cooling—exposure definitely aggravates shock—but we can keep the trunk warm and have the extremities open to a moderately cool room temperature. The vasomotor adjustment may be supported by having the patient lie on his back with the foot of the bed elevated about twelve inches. He should not be allowed to raise himself. One of the Bellevue patients suddenly sat up in bed and promptly collapsed and died. Obviously, acute vasomotor failure is greatly to be feared and guarded against.

I do not have time to go into the electrolyte disturbances and acidosis, which throw additional light upon tissue damage. I should like just to mention some new and not altogether uniform or rational data on the benefits of giving large quantities of sodium salts, perhaps simply by mouth[6]. Some good results with this method are reported in burn cases[7] which did not respond to plasma therapy.

Bringing all these ideas together as a guide for the practice of transfusion, especially in early shock cases, I should recommend the intravenous infusion, first, of 1-2 liters of physiological saline, immediately followed by ¼-½ a liter or more of plasma (of normal blood strength as regards protein concentration). In the presence of anemia (that is, hemodilution) this should be supplemented by transfusions of red cell suspensions or whole blood, and supplementary oxygen inhalation may be recommended. I would not recommend the saline in late cases where there is gross capillary leakage. Apparently the benefits of hemodilution and lowering of peripheral resistance must be weighed against the

5. Moon, V. H.: Shock: Its Dynamics, Occurrence and Management. Philadelphia, Lea and Febiger, 1942.
6. Rosenthal, S. M.: Experimental Chemotherapy of Burns and Shock, Pub. Health Rep. 57:1923-1935 (Dec. 18) 1942; 58:513-522 (March 26); 1429-1436 (Sept. 24) 1943.
7. Fox, C. L., Jr.: Oral Sodium Lactate in the Treatment of Burn Shock, J.A.M.A. 124:207 (Jan. 22) 1944.

water-logging of the tissues; you would not want to pour water into a leaky sieve. Plasma seepage might be controlled, however, by binding the tissues with a pressure bandage or plaster cast, although these are debatable. Adrenal cortical extract is not worth using. I will not discuss the controversial topic of transfusion with reconstituted plasma, serum, or plasma albumin of high (double or quadruple) concentration. An approximation of the normal physiological concentration with about 5-7 per cent plasma-protein or 4-5 per cent albumin is generally regarded as optimal and safest. Any threat of vasomotor collapse is a strong indication for prompt additional transfusion of plasma.

It cannot be too earnestly emphasized, in conclusion, that the emergency period is protracted in all shock cases, owing to the profound disturbances in the bodily economy —disturbances which are complicated and tax every resource of the physiologist and pathologist to explain them. The urgent clinical issues are a challenge to the man of medicine. Even in cases where the immediate emergency and its complications have been treated successfully, there is necessarily a long period of supportive treatment and intelligently ordered convalescence.

The natural vitamins in the natural foods.—If we insist on milling the grain and storing the flour, instead of storing the grain, and milling as needed, there are now known relatively non-toxic antioxidants that might prevent the rancidity of whole grain flour that takes place on long storage. And until we have that problem licked, what is the matter with storing the wheat and milling the flour as we need it? I do not see any essential economic principle in storing the flour in place of storing the wheat. In my judgment, the recent addition of a little of the vitamins and minerals now milled out of the grain, and singing paeans of dietary salvation over this "enriched" flour and bread is not a sound policy either for today or tomorrow. Let us go back to first dietary principles on this front. The whole wheat, rye, corn or rice grain is one of our most valuable and our least expensive protective foods. Fortunately, we still eat oatmeal, a whole grain food, having, among other important nutrients, proteins of a high biologic value. On the whole we can trust nature further than the chemist and his synthetic vitamins. Recently Professor J. C. Drummond, the scientific adviser to the British Ministry of Food, voiced his reluctance to put the dietary safety of a nation on synthetic vitamins, as a long-range policy. He thinks we must, and should, provide the natural vitamins in the natural foods. I stand on that platform, until we know a great deal more than we do today about foods and human nutrition.—Carlson, A. J.: Some Obstacles in the Path Towards an Optimum Nutrition, Science 97:389 (April 30) 1943.

POST WAR PLANNING FOR MEDICAL CARE OF THE RURAL POPULATION OF NORTH CAROLINA

I. H. MANNING, M.D.
CHAPEL HILL

Let us accept as a fact that the rural population as a whole is not receiving adequate medical care. The usual explanation given is the scarcity of doctors in the rural sections. In many counties, however, wherein there are adequate hospital facilities and several if not many doctors, this explanation will not hold water. With the good roads throughout these counties the transportation time from any part of the county to a hospital is not more than an hour, and except in a small percentage of cases the immediate need is not so great that this time is a factor. If, therefore, the rural population in such counties is not receiving adequate medical sevice the explanation is not the scarcity of doctors, but is largely, if not wholly economic.

In counties where adequate hospital facilities are not available and where there is an actual scarcity of doctors, the problem is again largely economic. Doctors cannot be expected to locate in any section in which they cannot make a living. For this situation the only remedy is the subsidy. There are, however, other factors.

The graduates of medical schools are thoroughly instructed and trained in the practice of scientific medicine which requires laboratory and hospital facilities, although not necessarily hospital accommodations. A section in which none of these essentials are available will not attract a young doctor who has had such training and who has some ambition, and it is safe to predict that few of our graduates will locate in rural sections under such conditions. The problem is to improve the conditions.

The Duke Foundation, on the recommendation of Dr. W. S. Rankin, announced in the beginning of its operation in North Carolina a program of building hospitals in various counties of North Carolina for the purpose of attracting doctors to the rural sections. While Dr. Rankin never proposed that the building of the county hospitals be wholly a responsibility of the Duke Foundation, the contributions of the Foundation have been liberal. The maintenance of these hospitals is left up to the community, except for the payment of $1.00 a day towards the

maintenance of charity patients. As generous and helpful as this offer is, the burden is still on the community, and the economic condition of the community may not and does not in many counties justify the erection of a hospital as a solution of the problem.

An alternative and less costly means of making practice in the rural sections more attractive is the establishment of a "diagnostic laboratory," which has been successfully tried out in Michigan as a project of the Kellogg Foundation. The laboratories are equipped to furnish at low cost such laboratory information as the doctor may desire. According to the published reports, such a laboratory may become self-supporting within eighteen months. Eventually it may become the nucleus of a hospital or at least a clinic. A laboratory may be set up in connection with the County Health Department for this purpose.

The clinic seems to offer the most promising solution of the problem of making the rural sections more attractive to the doctors. There are a number of clinics already operating in North Carolina—among them the Brewer-Starling Clinic at Roseboro, the Harris Clinic at Troy, the Hodgin's Clinic at Red Springs, the Hunter Clinic at Warrenton, and the Weinstein Clinic at Fairmont. These are privately owned enterprises limited in their services to minor surgical operations and obstetrics. Such clinics, if adequately equipped, will answer the purposes of a general practitioner in a rural community. Unfortunately the young doctor, fresh from a hospital training and perhaps in debt for his education, cannot afford a clinic; but if such a clinic is made available some of the recent graduates who prefer an independent practice and the opportunity to get quickly on their financial feet will accept the chance of a rural practice and later may take over the clinic as a private enterprise.

To make this suggestion operative there is need for a revolving fund to finance the venture. This is a chance for some foundation to render a real service to the rural population.

As the clinic does not provide for major surgical operations, and should not attempt to do so, the rural population must depend upon some hospital in near-by towns or cities, or upon a state supported general hospital as suggested by the Governor, where such work can be done safely. For these major hazards insurance is the only solution, and this can be brought within reach of the rural population through voluntary health insurance associations, which are designed for the protection of the low income groups and furnish the service at the lowest possible cost consistent with sound business.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., *Editor*
DURHAM

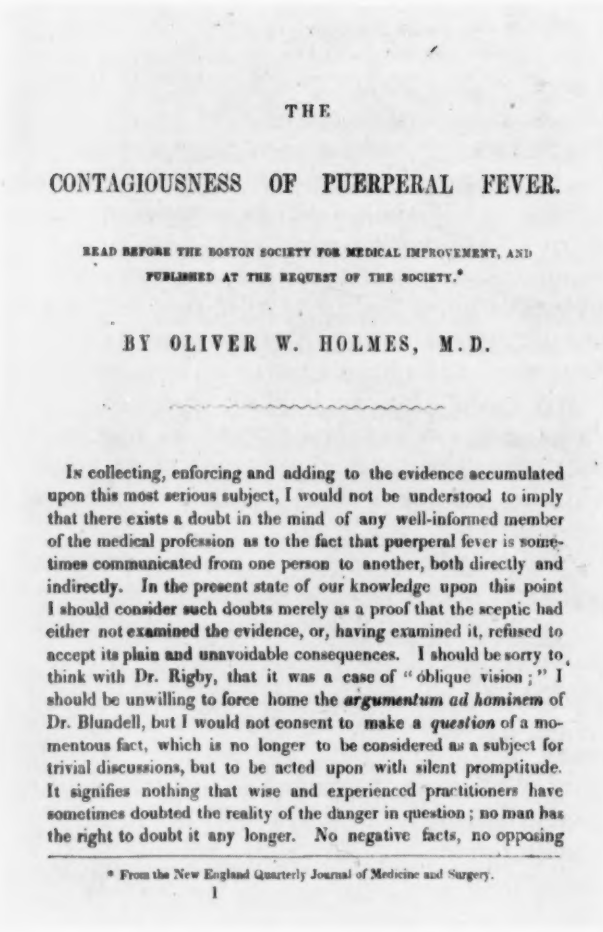
X
OLIVER WENDELL HOLMES
(1809-1894)

Oliver Wendell Holmes occupies a unique position in the annals of American medicine for, although he is by no means the *greatest* physician, he is certainly the most *distinguished* physician this country has produced. This seeming paradox is resolved by the verdict expressed by William Osler, that "he was the most successful combination which the world has ever seen of the physician and the man of letters." His contributions to medicine will ever endear him to physicians, but his literary work spread his fame throughout the English-speaking world. Only a mind superbly endowed could have produced "The Contagiousness of Puerperal Fever" and the "Chambered Nautilus."

Dr. Holmes was born into the circle of the cultured and refined of Boston, at a time when New England was the repository of much of the scanty store of American refinement; and in the course of his 85 years he became, like Bunker Hill, a local monument —witty, genial and the best conversationalist of his time.

During the early years of the Republic American medical students went to Edinburgh; later the French Clinics were popular; and finally German medicine exerted a predominant influence. Dr. Holmes studied in Paris, under the great clinician, Louis, to whom we owe much of our modern methods of bedside study of the patient.

Dr. Holmes and James Russell Lowell



THE

CONTAGIOUSNESS OF PUERPERAL FEVER.

READ BEFORE THE BOSTON SOCIETY FOR MEDICAL IMPROVEMENT, AND PUBLISHED AT THE REQUEST OF THE SOCIETY.*

BY OLIVER W. HOLMES, M.D.

In collecting, enforcing and adding to the evidence accumulated upon this most serious subject, I would not be understood to imply that there exists a doubt in the mind of any well-informed member of the medical profession as to the fact that puerperal fever is sometimes communicated from one person to another, both directly and indirectly. In the present state of our knowledge upon this point I should consider such doubts merely as a proof that the sceptic had either not examined the evidence, or, having examined it, refused to accept its plain and unavoidable consequences. I should be sorry to think with Dr. Rigby, that it was a case of "oblique vision;" I should be unwilling to force home the *argumentum ad hominem* of Dr. Blundell, but I would not consent to make a *question* of a momentous fact, which is no longer to be considered as a subject for trivial discussions, but to be acted upon with silent promptitude. It signifies nothing that wise and experienced practitioners have sometimes doubted the reality of the danger in question; no man has the right to doubt it any longer. No negative facts, no opposing

* From the New England Quarterly Journal of Medicine and Surgery.

1

Fig. 1. Holmes's pamphlet, "The Contagiousness of Puerperal Fever" (1843), one of the classics of American medical literature (Editor's collection).

founded the *Atlantic Monthly*, and the former's "Autocrat" essays not only gave the magazine immediate distinction and popularity, but firmly established the author's reputation. For forty years he was a Professor of Anatomy in the Harvard Medical School, but his vocation was that of letters.

In 1842 Dr. Holmes wrote his essay on "The Contagiousness of Puerperal Fever" (fig. 1), proving by the keenest of reasoning, and stating his conclusions with all the fervor of his eloquent pen, that this dread disease was a "private pestilence," conveyed to the patient by doctor and nurse, "no longer to be looked upon as a misfortune but a crime." Many years later he wrote: "I took my ground on the existing evidence before the little army of microbes was marched up to support my position."

Dr. Holmes was only 33 years old, and almost unknown, when he made his bold accusations. His challenge was taken up by two Philadelphia physicians, Dr. Hodge, Professor of Obstetrics at the University of Pennsylvania, and Dr. Meigs, who occupied the chair of Obstetrics at the Jefferson Medical College. Both of these men, with a complacency which some may find characteristic of that great city of learning, proved to their own satisfaction that puerperal fever was *not* contagious. Meigs was especially vehement, even descending to personal abuse, which drew from Holmes the famous statement that "no man makes a quarrel with me over the counterpane that covers a mother with her newborn infant at her breast."

The Philadelphia professors failed utterly to daunt Holmes, and his reply was to republish his essay, calling it "Puerperal Fever as a Private Pestilence." He appealed to students not to be deceived by the authority of their teachers, although "they naturally had faith in their instructors, turning to them for truth, and taking what they may choose to give them; babies in knowledge, not yet able to tell the breast from the bottle, pumping away for the milk of truth at all that offers, were it nothing better than a professor's shriveled forefinger."

Toward the end of his life Dr. Holmes was asked by Dr. Osler which had given him the greater satisfaction—to have written the essay on childbed fever, or his poem, the "Chambered Nautilus."

"I had a savage pleasure, I confess," wrote Dr. Holmes, "in handling those two profesors, but in writing the poem I was filled with a better feeling—the highest state of mental exaltation, and the most crystalline clairvoyance that had ever been granted to me. There is more selfish pleasure to be had out of the poem—perhaps a nobler satisfaction from the life-giving labor."

F. M. HANES, M. D.

The Physician Must Make Sure of the Meaning of Words.—It is most important that the physician make sure that he understands what the patient means by such words as stomach, vomiting, diarrhea, gas, and pain. To many persons "stomach" is synonymous with abdomen, and by "pain" may be meant a sensation of burning, quivering, pressure, throbbing, tension, or aching. It is highly important to distinguish these strange sensations from pain because pain is often a sign of organic disease, while the other strange sensations are commonly indicative of neurosis, and some, like quivering, always mean a neurosis. Epigastric "burning" in the Jew almost always means a functional trouble; probably a paresthesia in the skin.—Alvarez, Walter C.: Nervousness, Indigestion, and Pain, New York, Paul B. Hoeber, Inc., 1943, p. 35.

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OCTOBER, 1944

THE INDEPENDENT VOTER

The passing of Wendell Willkie has served to focus the eyes of the nation upon him as a symbol of the Independent American Voter — the man who places his country above his party. Up to the time of his death, Willkie had not decided which presidential candidate he would support. He was keeping his mind open to conviction, was studying every speech made by each candidate, and intended to weigh all the evidence and then support the one who, he felt, had most to offer the country.

Willkie was too independent to wear a party label. Although he had been classified as a member of both parties, all his life he was really an independent. He was nominated as a presidential candidate four years ago because the mass of voters in the Republican party believed in him and wanted a man who could not be made to swerve from what he considered to be the right path. Perhaps it was because he symbolized the true spirit of American independence that he polled the largest vote ever given a Republican candidate for president, and one of the largest ever given any candidate.

It is fortunate for the future of our country that the number of independent voters is increasing, and is large enough to hold the balance of power. The man who puts the welfare of his country above loyalty to his party should have a tremendous influence at the polls. Let us hope that his tribe will increase until every office holder and every politician will stand in awe of him. Politicians, regardless of party creed, fear nothing more than an aroused public opinion that may be expressed in votes. The more voters there are who are interested solely in clean, honest and efficient government and who scorn alike the demagogue and the dictator in politics, the more certain we are to have the kind of government we want.

It is probable that there are more independent voters among the medical profession than in any other group. A doctor's training makes him that way. He is accustomed to keep his mind open until he has weighed all the available evidence before forming an opinion; and when he has made up his mind, he is accustomed to ignore the pressure of prejudiced individuals. Furthermore, the average doctor has no political ambitions of his own, and so does not have to worry about his past voting record.

With the passage of time, Willkie will loom larger and larger in history. Already he is being classed with Calhoun, Clay and Webster, three other famous unsuccessful candidates for the presidency. Like them, Willkie is a much greater man than many who have occupied the White House. Although his body has been buried, let us not forget him,

"But keep his great heart with us, lest
Our nation's greatness find its grave."

DO WE WANT INFERIOR DOCTORS?

Although Drew Pearson, who writes the syndicated column known as the "Washington Merry-Go-Round," has often been called a liar, subsequent events have proved him right most of the time. Certainly there is no reason to doubt the accuracy of his report of the recent series of conferences on health conducted by Senator Claude Pepper of Florida[1]. If one judges from these hearings, apparently little that American medicine is doing is right, except in its war effort. Even commendation of this was qualified by the criticism that an "artificial shortage of physicians" was created, "which . . . is economically advantageous to A.M.A. members but harmful to the nation."

It is a pity that witnesses who term the "artificial shortage" of physicians as "economically advantageous" to the members of the A.M.A. can not sit in the offices of the civilian physicians left behind, and see for themselves how heavy a burden is the extra fifty per cent load of practice created by the absence of the youngest and most vigorous doctors. It might change their viewpoint if they would read the article "Oh Doctor!" in the *Saturday Evening Post* for August 19, and learn from a doctor's wife what it means to be a civilian doctor these days. Or they might be interested in glancing over the death list published in the *Journal of the American Medical Association* every week, and noting the marked increase in the number of medical men dying of coronary heart disease and other vascular accidents.

The "chief witnesses" listed in the hearings were: "F.D.R.'s own doctor, Admiral Ross McIntire," Surgeon General Thomas Parran, Lewis Hershey, Paul McNutt, and Dr. Alan Gregg of the Rockefeller Foundation. It is glaringly inconsistent for some of these witnesses to speak of the "artificial shortage of physicians" when they themselves have helped to create and to prolong it—to create it by demanding an excessively high ratio of physicians for service in our armed forces; to prolong it by refusing to defer medical or pre-medical students in order to allow them to pursue their medical studies.

Another criticism hard to accept is that of Drs. Gregg and McIntire directed against medical schools for training their students too well. "Recent medical graduates, they said, are too dependent upon the last word in hospital and laboratory facilities, which causes young doctors to look for city practice rather than going into the country, where they are more needed." While it is generally recognized by all our best teachers that the clinical approach to the patient is far more important than is the laboratory, it would be unfortunate to minimize the "last word" in laboratory tests. "Dr. Gregg suggested three-month interneships in rural hospitals." Surely he did not mean to imply that such a brief interlude between medical college and practice would fit a man for rural practice! If so, both the people and doctors of rural communities have a right to feel insulted, by the insinuation that an inferior type of doctor is good enough for country practice.

If we do not have inferior medical practice after the war, it will not be the fault of some of the chief witnesses who took part in the hearings. Not content with having curtailed medical education at both ends, they have now decreed that no more medical students shall be deferred, but that our medical schools will have to select their students from women and physically unfit men. It may be said, without disrespect to either class, that the practice of medicine is a rather strenuous occupation. Rural practice especially calls for sound bodies as well as sound minds.

1. Washington Merry-Go-Round, July 30, 1944.

* * * *

"SMALL UNRECOGNIZED STROKES"

In the May, 1944, issue of the *Journal of the Michigan State Medical Society,* an article by Dr. Walter C. Alvarez, of the Mayo Clinic[1], clarifies a definite clinical picture that every medical man encounters rather frequently. Many attacks of indigestion in people past middle age, says Dr. Alvarez, are due to thrombosis of a small vessel in the brain. The cerebral origin of the digestive symptoms is overlooked because no localizing signs, such as paralysis of an arm or leg, are present. Frequently exhaustive and exhausting x-ray examinations are made, which throw no light on the case. Even the "poorly functioning gallbladder" found in so many older people does not satisfy the diagnostic conscience of the attending physician.

The characteristics of the small stroke, according to Alvarez, are its suddenness of onset; the frequent association with dizziness

and perhaps nausea and vomiting; temporary mental confusion in many cases; loss of appetite; and a change of personality. The poor appetite and personality change are apt to persist, and there is usually a marked weight loss.

Whenever a patient at middle age or beyond suddenly has an attack of indigestion associated with dizziness and possibly with nausea and vomiting, followed by anorexia and a "nervous breakdown," a small cerebral thrombosis should be considered as the most probable cause.

The prognosis, while not absolutely unfavorable, is poor. Complete recovery seldom takes place, and the loss of appetite, indigestion—usually of the cholecystitis type—and some change of personality are apt to persist. Furthermore, the first such episode is very apt to be followed by others.

1. Alvarez, Walter C.: Small Unrecognized Strokes. A Common Cause of Illness in Older Persons. J. Michigan State M. Soc. 43:389-392 (May) 1944.

* * * *

WHEN WILL THE WAR END?

The progress made by the Allies in Germany has led to prophecies, even by experts, that the end of the war with Germany is virtually in sight. It is true that such optimism is discouraged by other experts as mere wishful thinking calculated to hamper the war effort. And, say the self-styled realists, even if Germany should quit, it will probably be years before Japan follows suit.

A missionary who has served thirty years in China and spent eight months in a Japanese internment camp returned to this country on the *Gripsholm* a year ago. In talking of the war recently, he advanced this thought: "Japan will never surrender before Germany does, but I firmly believe that her leaders are devoutly wishing for Germany to give up. Then they can say to the world, and to their own people: 'We are left to fight the whole world all alone. This is obviously an impossible task, so—since the other members of the axis have deserted us—we will surrender.' Thus, Japan will save her face and what is left of her skin."

Undoubtedly this missionary knows the Oriental psychology much better than do some of the military experts who are preparing us for years and years of fighting the little yellow men after Germany has faded out of the picture. Let us hope that he is right.

HYPOGLYCEMIA

Although it has been twenty years since Seale Harris first described spontaneous hypoglycemia, and insisted that it is almost as common as the opposite condition, diabetes, it is still often overlooked. The *Pennsylvania Medical Journal* for September has an excellent paper by Dr. Wallace Dyer, of Philadelphia, on the subject[1].

One who looks for it will be surprised at the number of patients who give a history leading to the diagnosis of hypoglycemia. The most frequent story is that of feeling weak, dizzy, and "trembly" three or four hours after meals—or perhaps sooner after a scant breakfast. The symptoms are an exact reproduction of an insulin reaction, and in the most severe cases loss of consciousness or convulsions may occur.

The laboratory procedure that proves the diagnosis is the glucose tolerance test—but it must be carried to the fourth or fifth hour to be conclusive. One fallacy in the test is that the patient usually does not take a normal amount of exercise while it is being made. Dr. Dyer has noted that the hypoglycemic reaction may occur with the blood sugar at a normal level, when it has fallen rapidly from a higher level.

Dr. Dyer concludes his article with the observation "that there are probably many cases of spontaneous hypoglycemia . . . masquerading as epilepsy, psychoneurosis, neurasthenia, menopausal neurosis, etc." Most of these patients respond to a diet high in protein, moderately high in fat, and low in carbohydrate, with feedings between meals and possibly at bedtime. Many patients with hypoglycemia learn by experience that a soft drink or a piece of candy will give quick relief; they do not realize that this stimulus to insulin production aggravates the condition.

If relief is not obtained by dietary means, further study is indicated, and a partial pancreatectomy may be necessary.

1. Dyer, W. Wallace.: Masked Hypoglycemia. Pennsylvania M. J. 47:1210-1212 (Sept.) 1944.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

Clinical Summary

DR. J. LAMAR CALLAWAY: This patient, a 15 year old single colored girl, was brought to the emergency room in coma. She was said by relatives to have consulted her local physician early in February because of an ulcer on her leg. A blood serologic test for syphilis was found to be positive. At that time the patient was given 0.45 Gm. of neoarsphenamine; on February 20, 0.2 Gm. of bismuth subsalicylate; and on March 6, 0.45 Gm. of neoarsphenamine. The patient complained of nausea and vomiting following each injection of the arsenical. On March 7 she complained of some dizziness but was able to continue her work. On March 9, three days following the second injection of neoarsphenamine, her parents found the patient unresponsive and could not arouse her. She muttered irrationally but had no frank convulsions. After she had been in coma for twelve hours, she was brought to the hospital.

The family and past history were noncontributory.

Physical examination: The temperature was 38.7 C., pulse 96, respiration 32, blood pressure 118 systolic, 78 diastolic. The patient was comatose. The extremities were flaccid, but painful stimuli resulted in a withdrawal response. The eyelids were open and the eyes deviated to the left, with a fine horizontal nystagmus to the left. The optic fundi appeared normal. The jaws were tightly closed. The right knee jerk and right ankle jerk were more active than were corresponding reflexes on the left. The Hoffman response on the right was positive and the Babinski test on the right resulted in fanning of the toes. The remainder of the physical examination was essentially normal.

Accessory Clinical Findings: The hemoglobin was 14.5 Gm. or 94 per cent, red blood cells 4,600,000, white blood cells 6,040, with a differential count of 87 per cent polymorphonuclears, 6 per cent large lymphocytes, 5 per cent small lymphocytes, 2 per cent monocytes. Twenty-seven per cent of the polymorphonuclear leukocytes were early forms. Blood Kahn, Kline, Wassermann and Mazzini tests were positive. The cerebrospinal fluid was grossly bloody, with an initial pressure of 195 mm. of water. Queckenstedt's test was normal. Cell count on the spinal fluid revealed 22 polymorphonuclears, 38 mononuclear cells and 50,000 red blood cells per cubic millimeter. Quantitative Wassermann tests were positive in all dilutions. The colloidal mastic test revealed a 5-5-5-4-3-2-1 curve. Total proteins in the spinal fluid were 463 mg. per 100 cc. Blood sugar was 114 mg. per 100 cc. Nonprotein nitrogen was 36 mg. per 100 cc. The carbon dioxide combining power was 36 volumes per cent. Urinalyses revealed a trace of albumin and strongly positive reactions for acetone and diacetic acid.

Course in hospital: Throughout the patient's stay she remained semi-comatose or comatose. The temperature rose intermittently every day to 40.5 C. During the nine days' hospitalization spinal fluid drainage was done seventeen times. The fluid did not change in any essential manner. The patient received daily infusions of physiologic saline. In addition she received 50 per cent glucose daily by vein as well as accessory vitamins given intravenously in doses of 300 mg. of ascorbic acid, 50 mg. of thiamin chloride, and 50 mg. of nicotinic acid amide. She also received intravenous calcium gluconate and 1 cc. of 1:1000 adrenalin in oil intramuscularly every four hours. She did not respond to therapy, however, and expired on the ninth day.

Discussion

DR. CALLAWAY: The diagnosis of hemorrhagic encephalopathy following neoarsphenamine seems inescapable. The onset following antisyphilitic therapy in a hitherto healthy colored girl, together with the blood and spinal fluid findings, leaves little choice of diagnosis, although a vascular accident (ruptured cerebral aneurysm), tuberculous meningitis, diabetic coma, virus encephalopathy, uremia, and purulent meningitis were all considered. Fortunately for all of us encephalorrhagia following administration of an arsphenamine is uncommon. It continues, however, to be the most frequent cause of death resulting from antisyphilitic therapy. There is as yet no satisfactory explanation for the occurrence of this unfortunate reaction, nor is there available any means of predicting its occurrence. Treatment is empiric.

The principal pathological findings in this case should be limited to a diffuse hemorrhagic, purpuric involvement of the meninges with perhaps focal hemorrhages and considerable edema in the parenchymatous brain tissue.

DR. RAY O. NOOJIN: Age and sex play no role in the incidence of hemorrhagic encephalopathy but in 70 per cent of the cases reported in women, the patients were pregnant. Preliminary heavy metal treatment with bismuth does not alter the incidence or frequency of encephalorrhagia. Approximately 75 per cent of reactions of this type occur after one to three injections of an arsenical; the majority of cases follow the second injection. As has been previously pointed out, there is no satisfactory explanation for this unfortunate reaction. Tzanck and Lewi[1] have suggested that the neurovegetative system plays an important role, because of certain similarities between Milian's erythema and hemorrhagic encephalopathy. Seventy-five per cent of patients who develop hemorrhagic encephalopathy die within three days after the onset of toxic symptoms. The treatment procedure most commonly used requires hospitalization, repeated spinal fluid drainage, 1 cc. of 1:1000 adrenalin intramuscularly at four hour intervals, large doses of ascorbic acid, parenteral glucose, and any supportive measures, such as oxygen inhalations, that may be required. The general pathologic picture is not that of an inflammatory reaction but rather the result of a toxic effect upon the endothelium of the small blood vessels of the brain and meninges.

Pathological Discussion

DR. GEORGE MARGOLIS: At autopsy an extensive lobular pneumonia was found. The liver was mildly jaundiced but there was no microscopic evidence of necrosis. Aside from a few petechial hemorrhages in the pelvis, no changes were noted in the kidneys. No degenerative changes had occurred in the adrenals.

The leptomeninges were delicate and over the cerebral cortex there was no evidence of subarachnoid hemorrhage. The brain weighed 1360 Gm. and the convolutions showed no evidence of flattening suggestive of edema. The external aspect of the pons was softened, dark and hemorrhagic, and the basilar vessels were congested. On section an extreme degree of hemorrhagic necrosis, involving all but the dorsal portion of the pons, was disclosed. Multiple coronal sections through the brain revealed numerous foci of softening and hemorrhage. The thalamus, corpus callosum, caudate nucleus, internal capsule, claustrum and cerebral peduncles were involved. The grey matter contained only a few petechial hemorrhages. Striking microscopic changes were present in the blood vessels of precapillary size surrounding the foci of necrosis. The endothelium was swollen. Although many of the areas of necrosis had a perivascular localization there were large infarct-like areas of necrosis in which all elements of nervous tissue had been destroyed. A glial rection, consisting of fat-laden microglia and swollen astrocytes and oligodendroglia, was prominent about many foci.

The essential feature of these lesions was the profound injury to blood vessels, with consequent thrombosis, hemorrhage and widespread destruction of nervous tissue. The extensive destruction of the pons was especially notable.

Dr. Callaway's Diagnosis

Hemorrhagic encephalopathy following neoarsphenamine.

Anatomical Diagnoses

Hemorrhagic encephalopathy
Lobular pneumonia

Concluding Discussion

DR. CALLAWAY: The syndrome of hemorrhagic encephalopathy following arsenical therapy tends to follow a consistent clinical picture.

Although the diagnosis is usually obvious, the etiology and appropriate prophylactic and therapeutic measures are as yet obscure. In view of the present mortality, a different therapeutic approach from those now contained in the literature would seem desirable. It is hoped that when BAL (now restricted to use by the armed forces) becomes available for general clinical use the encephalopathies due to arsenic as well as other serious reactions to the arsenicals will be amenable to treatment.

1. Tzanck, A. and Lewi, S.: Arsenical Encephalopathy. Ann. de Dermat. et Syph. 10:752, 1939; 10:893, 1940.

Now learn what and how great benefits a temperate diet will bring along with it. In the first place you will enjoy good health. Horace.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

VOL. XVII OCTOBER, 1944 NO. 10

TUBERCULOSIS presents itself in varying aspects and it is often difficult to recognize it even after careful study. The fact that the death rate from tuberculosis among older men has remained high has not been generally recognized nor its importance in the practice of medicine accepted and the fact applied.

CASE REPORT FROM THE MASSACHUSETTS GENERAL HOSPITAL

Presentation

A seventy-nine year old retired factory manager entered the hospital because of persistent cough. The patient had been in excellent health until six months previously when without upper respiratory infection he developed a paroxysmal cough producing a small amount of nonodorous, greenish sputum. Six weeks after admission the amount of sputum increased to several tablespoons daily. He developed a "smoky feeling" under the sternum at the level of the sixth rib, without definite pain. He has had no hemoptysis, chills, fever or weight loss. A chest X-ray film showed slight enlargement of the heart downward and to the left. The lower part of the right lung field was less radiant than normal. In the lateral view the outline of the middle lobe was easily seen, and its position corresponded to the area of fullness in the right lower chest. The interlobar septa were moderately thickened. The lung fields were otherwise clear.

Six years earlier after a life of extreme activity he had been advised to slow down. Two or three years later he noted shortness of breath upon climbing two flights of stairs.

Physical examination showed a well-developed, well-nourished man, distressed by frequent cough. The trachea was in the midline. There was dullness posteriorly over the right clavicle. Breath sounds were increased and well transmitted. Many moist inspiratory rales were heard over the right middle and upper lung fields. There was a loud moist wheeze over the whole right lower chest. The heart was slightly enlarged; the sounds were regular but faint. Examination was otherwise negative. The blood pressure was 158 systolic, 88 diastolic; the temperature was 99.4 F., the pulse 85, and the respirations 24.

Blood examination showed a hemoglobin of 14.9 Gm., a white-cell count of 6800 with 64 per cent neutrophils. The urine was normal. A blood Hinton was negative. A chest X-ray, taken two weeks after the earlier one, revealed some increase in the size and density of the lesion on the right. There was no respiratory movement of the right half of the diaphragm. The outline of the diaphragm was irregular, and the right costophrenic sinus was shallow. The pleura was somewhat thickened along the axillary border. A bronchoscopy was done on the third hospital day.

Differential Diagnosis

Dr. Helen Pittman: May we see the X-ray films?

Dr. Milford Schulz: The right lobe does not seem to me to be particularly decreased in size. There is hazy increased density overlying the right lower chest.

Dr. Pittman: What about the pleural thickening?

Dr. Schulz: There is a little on the right and I wonder if the increase in density on the right side as compared with the left might not all be due to the thickened pleura.

Dr. Pittman: What about the position of the diaphragm on the left?

Dr. Schulz: It is elevated. A true paresis of the left half of the diaphragm, which would have been noticed fluoroscopically, was not observed.

Dr. Pittman: There was true paresis on the right?

Dr. Schulz: That must be accepted as the fluoroscopist's observation.

Dr. Pittman: These films do not throw much light on the subject and I am rather disappointed.

This seventy-nine year old man was in excellent health until the age of seventy-three

when he was advised to "take it easy." He had shortness of breath, not unusual for one that old.

His illness began six months previously, when without any prodromal or respiratory symptoms, he suddenly began to have paroxysmal cough and raised small amounts of sputum; this continued for four months. Then, for no apparent reason, the patient developed a "smoky" feeling—whatever that means—under the sternum at the level of the sixth rib. He had no pain, chills, fever or weight loss and did not spit blood. The only clue is that he had productive cough.

Physical examination showed dullness posteriorly on the right, over the right clavicle. "Breath sounds were increased and well transmitted." They usually are in that region of the chest. The loud moist wheeze over the right lower chest is the first thing that gives a localizing clue; the unilateral wheeze I interpret as a definite indication of partial obstruction of one bronchus on the right side, the middle or lower lobe, I cannot be sure which. He had slight fever, which seems noncontributory. He had no anemia, and no leucocytosis and the white count was normal, with a low percentage of neutrophils.

We have here a man with a cough who had nothing to go with a cough and no evidence of infection beyond a temperature of 99.4 F. At no time had he bleeding or pain or anything that should lead one to suspect carcinoma. Of all things that should make one suspect carcinoma, bleeding is the most important. The absence is important but not necessarily diagnostic.

Then we come to the next positive finding —the area of increased density in the right lower chest. The only other definite positive finding is that there was no respiratory movement of the right half of the diaphragm. Why I do not know. We have nothing to suggest that there was a phrenic involvement on that side. It is hard to think of an aortic aneurysm involving the phrenic nerve with as little to go on as this.

The immobility of the diaphragm is an important finding but there is not enough evidence to say whether or not it is due to acute pleurisy. There remains the area in the right lower chest, which is perhaps secondary to the paralysis of the diaphragm. I rather doubt it because he is producing large amounts of sputum. A partial obstruction of the bronchus causing the wheeze may be assumed. This is unrelated to the diaphragm unless we assume carcinoma for which there is no evidence.

A bronchial adenoma must be considered but there is no evidence for it nor for a non-opaque foreign body.

Tuberculosis always has to be thought of, but again there is not much to go on. It is an unusual site for tuberculosis, although that does not rule it out. In a seventy-nine year old man I should certainly expect more evidence of old tuberculosis elsewhere in the chest than we have in this X-ray film. There is no evidence of old pleural infection to make one think that he could have had empyema and a bronchial fistula.

There remains, therefore, a series of entirely unsatisfactory explanations for this man's condition. Because of the physical signs and wheeze on the right side I am going to cling to a partial obstruction of the bronchus. Because I have no satisfactory evidence for carcinoma or tuberculosis, I am going to call it adenoma, but with little faith.

Dr. Edward B. Benedict: We did a bronchoscopy with a preliminary diagnosis of carcinoma; the most likely diagnosis at this age was probably carcinoma. Bronchoscopy showed widening and partial fixation of the carina, and a nodular out-cropping in the right-stem bronchus causing partial obstruction of the right middle and lower lobes.

Clinical Diagnosis: Carcinoma of the lung.

Dr. Pittman's Diagnosis: Bronchial adenoma.

Anatomical Diagnosis: Tuberculosis of the bronchus.

Dr. Benjamin Castleman: The material received showed a granulomatous process, with one suggestive tubercle. The amount of material was insufficient for a positive diagnosis of tuberculosis. It looked suspicious of tuberculosis, however, and this was confirmed by examination of the sputum, which contained numerous tubercle bacilli. The patient therefore had tuberculous stenosis of the bronchus, probably with involvement of the mediastinal lymph nodes.

Case Records of the Massachusetts General Hospital, The New England Journal of Medicine, April 13, 1944.

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.
RALEIGH

EVIDENCE: *Evidence competent to show Negro blood includes the kind of hair, color of skin, opinion and expert testimony.*

Our North Carolina Constitution, Article 14, Section 8, and General Statutes 51 to 53 make all marriages between a white person and a person of Negro descent to the third generation void. Therefore, every person who has one-eighth Negro blood in his veins is prohibited from marrying a white person.

Frequently the testimony of a physician is required regarding such matters, although apart from his knowledge of anatomy, he is in most cases little, if any, better prepared to testify than the ordinary layman who has had the opportunity to observe the physical characteristics of this particular race.

The case at hand, illustrating the mode of proving Negro blood, is a criminal prosecution upon a warrant charging the defendant with fornication and adultery. The evidence in Superior Court tended to show that a man of alleged Negro blood and a white woman entered into a purported marriage, and cohabited as man and wife. The evidence submitted was sufficient for the jury to render a verdict of guilty as to the defendant, the alleged Negro, and there was a judgment imposing a prison sentence, which was suspended upon certain conditions. The defendant appealed to the Supreme Court.

It should perhaps be stated in explanation that the defendant's guilt on the charges of fornication and adultery depended upon whether or not he had Negro blood in his veins within the prohibited degree. If he did not, he was considered legally married, and was not guilty of any criminal or illegal cohabitation.

When this case came on to be considered by the Supreme Court this tribunal stated that our legislature had not thus far prescribed an exclusive mode or manner by which the percentage of Negro blood could be ascertained in cases of this kind. However, the Court has approved various ways to determine the extent to which white and Negro blood are comingled in a person. In referring to an old case, that of State *versus* Chavers, the Court indicated that in this suit evidence was introduceed to show the color of the litigant's father, as well as of the litigant, and the type of hair which the father and son had. At the trial the jury inspected the litigant at the request of counsel, and it was decided in this case that sufficient evidence had been introduced for the consideration of the jury upon the question submitted to them. Its weight was termed sufficient to establish the fact of his being a Negro. The Supreme Court also referred to another case in which it held as follows: "While in doubtful cases only an expert would be qualified to testify from the appearance of a person, as to the extent to which white and Negro blood are comingled in the veins, it does not require any peculiar scientific knowledge to be able to detect the presence of African blood by the color and other physical qualities of the person."

In this particular case, a physician testified that he was present at the defendant's birth and had known him all his life, and he stated that when the defendant was born he showed certain definite physical characteristics of the colored race, and that in his opinion he was of mixed blood.

The evidence submitted with reference to the defendant's reputation and his physical characteristics, along with expert testimony of a physician, was sufficient in the opinion of the Supreme Court to sustain the verdict of the jury, and it was held that in the trial in the lower Court there was no error. (Spring Term, 1944, Page 228. Vol. 224.)

The Diagnostic Layman

Some folks believe implicitly,
And some are just agnostic,
Some listen with simplicity,
But I am diagnostic.

I tell the doctors what is wrong,
They listen with indulgence,
And try to coddle me along,
(I know they're not such dull gents.)

But after all, the pain is mine,
And I know where I feel it,
And conversation is my line,
I've never yet concealed it.

I really will talk less and less
And listen more intently,
I'll be polite, nod yes, yes, yes!
Act less impertinently.

But, Doctor, don't you really think—
Oh, there I go once more.
Of course he thinks, Good Lord, he's gone!
And did he slam the door!

Jean Allan.

From Nov. 1943 issue Hygeia.

BULLETIN BOARD

News Notes From the North Carolina Tuberculosis Association

1944 Christmas Seal

Forty years ago this Christmas season, a postal clerk in Denmark saw the realization of a year-old dream. Day after day, as he sorted letters, his thoughts had turned to the poor children of his country suffering from tuberculosis. One day, in the midst of the Christmas rush of mail, it occurred to him that stamps could be used in alleviating the suffering of the sick. He obtained permission from the King of Denmark for the sale of a stamp which had no value in conveying a letter but was of infinite value in saving lives. Thus, in the winter of 1904, Einar Holboell, the Danish postal clerk, put on sale the first Christmas Seal. That same year an organization had been formed in the United States called the National Tuberculosis Association. The purpose of this organization was fundamentally the same as Holboell's—to combat the White Plague. They adopted the Danish postal clerk's idea of the seal as a means of financing this work. Today the North Carolina Tuberculosis Association is only one among the many affiliates of the National Tuberculosis Association which sells Christmas Seals for health's sake.

This year the NTA, wishing to honor the great postal systems, has chosen for the symbol on its Seal a postman. This is the more appropriate because it was a postal employee who first thought of the Christmas Seal. Behind this symbol lies the whole story of communication, from the tom-toms and signal fires of primitive man, the runners of early days, the stage-coach, to the ocean liner, airplane, telephone, telegraph and radio of today.

* * * *

Since the National Tuberculosis Association was organized in 1904, the death rate from tuberculosis has been cut 75 per cent. Yet it still takes a life every nine minutes and kills more Americans between the ages of 15 and 45 than any other disease. In North Carolina alone it killed over 1450 people last year.

* * * *

$250.00 has recently been granted by the NCTA to the North Carolina State College (colored) Student Health Association for a program of improving the Negro college health education work in North Carolina. Definite stress will be placed upon training students in the habits of healthful living which will in turn prevent the incidence and spread of tuberculosis and other communicable diseases.

To help establish a Department of Public Health Education at the North Carolina State College for Negroes, the NCTA has also granted another $250. Dr. James E. Shepard, President of the College, seeing the need for doing something worth while to inform the public on how to keep well, how to deal with disease, and how to promote and sponsor activities that have to do with good health, made this appeal to the NCTA which reacted promptly.

A state-wide committee on Negro program will be appointed soon to act in an advisory capacity to the executive committee and Board of Directors of NCTA. This committee will study the Negro tuberculosis situation in North Carolina and will make recommendations as to what is needed in the way of further program. The incidence of tuberculosis among Negroes in North Carolina is high and it is believed that such a committee will be a great help in the fight against the disease.

Edgecombe-Nash Counties Medical Society

The Speight, Stone and Bunn Clinic entertained the Edgecombe-Nash Counties Society at a dinner meeting held at Rocky Mount on September 13. The speaker was Dr. Samuel Fisher of the Rapid Treatment Center in Durham, who discussed "Early Syphilis and the Part Played by the Rapid Treatment Center."

Forsyth County Medical Society

The Forsyth County Medical Society held a dinner meeting on September 12 in Winston-Salem. Dr. S. D. Craig and his associates from the emergency hospital in Hickory gave a discussion of polio.

News Notes

Dr. Julian M. Ruffin, Associate Professor of Medicine at Duke University, is among a group of experts in nutrition who have been appointed Consultants to The Surgeon General.

Dr. Roger Denio Baker, associate professor of pathology in charge of surgical pathology, at Duke University School of Medicine has been appointed professor and chairman of the department of pathology in the Medical College of Alabama at Birmingham, a division of the University of Alabama. He will move to Birmingham on December 1, 1944. Dr. Baker requests that autopsy and surgical materials for the Fungus Disease Registry be sent to him at Birmingham 5, Alabama, after that date. The mycologic and serological materials of this Registry should continue to be sent to the office of Dr. David T. Smith, Duke Hospital, Durham, North Carolina.

Dr. Paul H. Ringer of Asheville is President of the Southern Chapter of the American College of Chest Physicians, and will preside at the St. Louis meeting. Dr. Merle D. Bonner, of Jamestown, North Carolina, is on the program committee.

New Penicillin Study Instituted At Fort Bragg

Doctor Charles Rammelkamp, member of the Commission on Acute Respiratory Diseases, Epidemiological Board, Preventive Medicine Service, Office of The Surgeon General, and Captain William Leifer, M.C., Regional Hospital, Fort Bragg, North Carolina, recently spent several days in the Office of The Surgeon General conferring on the new method of administering penicillin developed by Captain Romansky, M.C., at the Army Medical Center. The new technique prolongs the action of penicillin by suspending it in a mixture of 4 per cent beeswax and peanut oil. Dr. Rammelkamp will act in a consulting capacity with Captain Leifer who is instituting a study of the method at Fort Bragg Regional Hospital. It is believed the new method will have important effects upon the use of this agent.

Medical Society of Virginia

The Medical Society of Virginia will hold its annual meeting in Richmond at the Hotel John Marshall on October 23, 24, and 25.

Southern Chapter, College of Chest Physicians

The Southern Chapter of the American College of Chest Physicians will meet jointly with the Southern Medical Association at St. Louis, Missouri, November 13-16, 1944. The program is as follows:

MONDAY, NOVEMBER 13

Scientific Session

2:00 P. M.....St. Louis Municipal Auditorium

Paul H. Ringer, M.D., F.C.C.P., Asheville, North Carolina, President, Southern Chapter, presiding.

"The Unexpandable Lung," Sydney Jacobs, M.D., F.C.C.P., New Orleans, Louisiana. Discussion to be opened by Carl C. Aven, M.D., F.C.C.P., Atlanta, Georgia.

"Primary Carcinoma of the Lung—Ten-Year Follow-Up," William F. Rienhoff, Jr., M.D., Baltimore, Maryland. Discussion to be opened by Evarts Graham, M.D., F.C.C.P., St. Louis, Missouri.

"Rehabilitation of Cases of Lung Resection," Lt. Col. Brian B. Blades, M.C., Washington, D.C. Discussants: Alton Ochsner, M.D., F.C.C.P., New Orleans, Louisiana, and Maurice G. Buckles, M.D., F.C.C.P., Louisville, Kentucky.

"What Shall We Do With Silent and Masquerading Chest Lesions?", Richard H. Overholt, M.D., F.C.C.P., Brookline, Massachusetts. Discussion to be opened by Duane Carr, M.D., F.C.C.P., Memphis, Tennessee.

7:15 P. M.....DeSoto Hotel

President's Dinner (informal), Walter Vest, M.D., F.C.C.P., Huntington, West Virginia, Toastmaster. Introduction of Jay Arthur Myers, M.D., F.C.C.P., Minneapolis, Minnesota, President, American College of Chest Physicians, and Charles M. Hendricks, M.D., F.C.C.P., El Paso, Texas, President-Elect, American College of Chest Physicians.

Guest Speaker: Herman E. Hilleboe, M.D., F.C.C.P., Washington, D. C., Medical Director Chief, Tuberculosis Control Division, United States Public Health Service.

President's Address: Paul H. Ringer, M.D., F.C.C.P., Asheville, North Carolina, President, Southern Chapter, American College of Chest Physicians.

TUESDAY, NOVEMBER 14

Scientific Session

9:00 A. M.....St. Louis Municipal Auditorium

Herbert L. Mantz, M.D., F.C.C.P., Kansas City, Missouri, presiding.

"Atypical Pneumonia Resembling Pulmonary Tuberculosis," Major Walter L. Nalls, M.C., F.C.C.P., Washington, D. C. Discussion to be opened by Dean B. Cole, M.D., F.C.C.P., Richmond, Virginia.

"Hedblom's Syndrome: Acute Primary Diaphragmitis," Minas Joannides, M.D., F.C.C.P., Chicago, Illinois.

"Tuberculous Empyema," George G. Ornstein, M.D., F.C.C.P., New York, New York. Discussants: H. I. Spector, M.D., F.C.C.P., St. Louis, Missouri, and Karl Schaffle, M.D., F.C.C.P., Asheville, North Carolina.

"Pneumoconiosis, Especially as Found in the Metal and Granite Trades," O. A. Sander, M.D., Milwaukee, Wisconsin.

12:30 P. M.....DeSoto Hotel

Luncheon to be followed by Business Meeting, Paul A. Ringer, M.D., F.C.C.P., Asheville, North Carolina, President, Southern Chapter, American College of Chest Physicians, presiding.

National Venereal Disease Control Conference

A national venereal disease control conference will be conducted under the auspices of the United States Public Health Service at St. Louis, Missouri, November 9, 10 and 11.

Leading experts on venereal disease control from the United States, and from some other nations, will consider international and post-war venereal disease control, and other specialized subjects such as new methods of treating the venereal diseases, diagnosis, epidemiology, education, and moral, social, and community influences.

State and local health officers, venereal disease control officers, practicing physicians, and others engaged in venereal disease control activities are invited to attend. Meetings will convene in the St. Louis Medical Society Building at 3839 Lyndell Court.

U. S. Public Health Service Division of Nurse Education

District offices of the Division of Nurse Education, U. S. Public Health Service, are being opened in seven districts throughout the country, according to Dr. Thomas Parran, Surgeon General, U.S. Public Health Service.

An office has been opened in Washington, D. C., with Miss Marie Farrell as Nurse Education Consultant in charge. This territory includes: District of Columbia, Maryland, North Carolina, Virginia and West Virginia.

The National Foundation for Infantile Paralysis, Inc.

The peak of the 1944 epidemic of infantile paralysis for the nation as a whole apparently has been passed, and the incidence of the disease is now tapering off, according to the latest reports received by The National Foundation for Infantile Paralysis.

The heaviest incidence of cases for the nation occurred in the week of September 2 when 1,683 cases were reported to the U. S. Public Health Service. The week of September 9 showed a drop to 1,487, and reports since then from epidemic states indicate the decline is continuing.

The total for the year up to September 9 was 10,959 cases, or more cases for the comparable period than at any time since America's worst epidemic year in 1916.

This year's total for the first 36 weeks is 2,030 cases higher than for the same period in 1931, which to date is the second highest epidemic year.

In combatting the epidemic, the National Foundation has sent out seven doctors, 50 physical therapists and more than seven tons of wool as well as emergency financial relief. The American Red Cross has recruited approximately 700 nurses to supplement local facilities in epidemic areas. All 26 of the respirators owned by the National Foundation are still in active use.

* * * *

In the last eleven years the American people have contributed $29,562,742.54 to conquer infantile paralysis, Basil O'Connor, President of The National Foundation for Infantile Paralysis, announced at the opening of the annual meeting of the Medical Advisory Committees of the National Foundation at the Waldorf-Astoria Hotel. At that meeting applications for grants to carry on medical research were considered and further plans for carrying on the fight against infantile paralysis were made.

AUXILIARY

AUXILIARY PROGRAM SUGGESTIONS 1944-45

Mrs. William J. Butler, National Program Chairman, has sent to me the well planned program of the Auxiliary to the American Medical Association, which is outlined below.

Hygeia

This magazine, which the American Medical Association stands so wholeheartedly behind, should truly be the hand book of every Auxiliary member. It has always been a major part of our National Auxiliary program, and we would do well to look to this source in planning our health programs. Health has always been of vital importance to us, but now and in the post-war days to come it will be of still more importance. *Hygeia* contains a wealth of information, and can be of great help to us.

Medical Legislation

The medical profession is facing many serious problems, and as doctors' wives we must be on the alert at all times. The Wagner-Murray-Dingell Bill (S. 1161) is vicious, and we must put forth every effort to guard the public against it. It is appalling to talk with people and find how misinformed they are on this subject. They do not realize the enormous amount of money which would have to be expended, nor do they realize that when they call the doctor, instead of the tried, true and faithful family physician, there will be in all probability just another politician standing by their bedside. It is up to us to make the public understand the seriousness of this threat, so please let this be one of your most important programs. I wish also to call attention to the E.M.I.C. (Emergency Maternity and Infancy Care) program, for families of service men. The medical profession approves of this wartime service to the wives and infants of our men in service, but is still determined to guard against the continuance of governmental medicine outside the fields of prevention and the care of the underprivileged. We are advised to keep informed about this program through the *Journal of the American Medical Association.*

Juvenile Delinquency

This problem has always been food for thought, but now the time has come when we must not think, but act. Dr. Herman L. Kretschmer, President of the American Medical Association, says that he "knows of no better group than the Woman's Auxiliary to take an active part in the prevention of delinquency." I would like to see our auxiliaries in North Carolina take a very active part in an effort to eradicate if possible all juvenile delinquency in our communities. This would be indeed a gigantic undertaking, and of course could not be accomplished in a short time. Would it not be worth a try, however, regardless of how long the time may be? I am of the opinion that the larger percentage of juvenile delinquency originates in the home, and that the delinquent parents must be dealt with first. There is much to be said on this subject, but space does not permit. I do want to urge each and every program chairman to give this matter some very serious thought, and try to outline some plan to help these unfortunate children.

Final Suggestion

We also suggest to all county auxiliary program chairmen a program on the discovery and the uses of penicillin, and also advise them to be on the alert for any other new scientific discoveries in medicine.

Last year the Auxiliary assisted in the recruitment of students for the U. S. Cadet Nurse Corps, and this year it is still a part of our program to continue this.

MRS. MILLARD D. HILL,
Program Chairman
3014 Fairview Road,
Raleigh

Wouldn't it have been a wonderful thing for humanity if when gunpowder was invented the Duke of Brunswick, to whom legend says the first sample was submitted, had said, "Take the inventor out and tie him to a stake and blow him up with his own powder and the formula along with him!" Wouldn't the financiers of the world really have had a chance to be heroes for once if they had refused to finance the Wright Brothers' airplane? Wouldn't it have been wonderful if that nameless epigrammatist who, when he first saw the telephone or the radio said something like "What hath God wrought?" had said instead, "Pull the darned thing off the wall and throw it in the ash can." I think it would.—Logan Clendening: Resistance to Change as a Contribution to Medical Progress, Connecticut State M. J. 7:522 (August) 1943.

BOOK REVIEWS

The Practice of Medicine. By Jonathan Campbell Meakins, M.D. Ed. 4. 1444 pages. Price, $10.00. St. Louis: The C. V. Mosby Company, 1944.

The newest edition of this text again furnishes evidence of the almost insuperable difficulties encountered by one author in keeping abreast of the rapid advances in medicine. It is gratifying to find included a chapter on parasitic and tropical diseases, since these are receiving greater attention at the present time. The use of black and white and color photographs throughout the book adds considerably to its interest. The paper is of excellent quality, so that the illustrations reproduce very well.

The book suffers from lack of detail in many subjects, doubtless due to the effort to keep the total size within reason. The most serious drawback is pointed out by the dates of references. The greater part of the references are ten years old, or older. Even in so rapidly advancing a field as nutrition, only two references given are later than 1934. Scattered throughout the book are numerous dogmatic points which are at variance with the generally accepted facts. For example, it is recommended that a diet rich in proteins be avoided in the medical treatment of peptic ulcer, whereas proteins are very efficient amphoteric substances acting as anti-acids, and are the basis of the Meulengracht diet. Vaccine is still recommended in the section on therapy of pneumococcus lobar pneumonia. In the treatment of tetanus, the use of toxoid is allotted one sentence. This does not mirror the importance of the prevention of the disease, as shown by statistics in the present war.

Fertility in Women. By Samuel L. Siegler, M.D., F.A.C.S., Attending Obstetrician and Gynecologist, Brooklyn Women's Hospital; Attending Gynecologist, Unity Hospital. 450 pages. 194 illustrations. Price, $4.50. Philadelphia: J. B. Lippincott Company, 1944.

Dr. Siegler has written this monograph to accompany that of Dr. Hotchkiss on **Fertility in Men.** His experience justifies his selection as author.

The material is well organized and the volume is for this reason an excellent reference text on the subject. The index is adequate, and full bibliographies are given at the end of most chapters.

General consideration of infertility (including relative fertility, relative sterility and absolute sterility) is sound. The author carefully points out that the fertility of a couple is to be considered—not merely that of an individual. An excellent classification of relative sterility is given.

The section on history taking is good. The section on general examination largely emphasizes classical endocrine syndromes without adequately considering general constitutional causes of infertility. The endocrine syndromes are concisely given, with illustrative photographs and a very brief summary of their characteristics. Regional examination is more adequately given. The special methods for the investigation of sterility are described in considerable detail.

This book is a valuable addition to the library of anyone interested in this field. Although the prejudices of the author must be reflected in any such volume, in general it may be said that the field is adequately covered in a sound and complete way.

Osler's Principles and Practice of Medicine. Edited by Henry A. Christian, A.M., M.D., LL.D., Sc.D., Hon. F.R.C.P. (Can.), F.A.C.P., Hersey Professor of the Theory and Practice of Physic, Emeritus, Harvard University; Clinical Professor of Medicine, Tufts College Medical School; Physician in Chief, Emeritus, Peter Bent Brigham Hospital; Visiting Physician, Beth Israel Hospital, Boston. Fifteenth Edition. 1498 pages. Price, $9.50. New York: D. Appleton-Century Company, 1944.

That the fifteenth edition of this book followed its predecessor within eighteen months is indicative of at least three things: 1, the rapid progress made by medicine; 2, the alert mind of the present editor which enabled him to keep up with this progress; and 3, the sterling worth of the book itself.

Notwithstanding the restrictions imposed by the government effort to conserve paper, the clear type, even in the index, makes it easy to read; and the content is worthy of the format.

This reviewer can do no better than to repeat from this journal's review of the fourteenth edition: "In such a brief review as this must be, one can only admire the general excellence of Dr. Christian's book. It represents the mature thought of a great clinician, and will prove a valuable addition to any library... We hope it will continue to be a hardy perennial."

Fertility in Men. By Robert Sherman Hotchkiss, B.S., M.D., Assistant Professor of Urology, New York University Medical College; Instructor in Surgery (Urology), Cornell Medical College; Assistant Visiting Attending Physician, Department Urology, Bellevue Hospital; Visiting Assistant Attending Physician in Surgery (Urology), New York Hospital; Chief of Urological Clinic, New York University Medical College Clinic. 216 pages, 95 illustrations. Price, $3.50. Philadelphia: J. B. Lippincott Company, 1944.

Dr. Hotchkiss has attempted to bring together the available information on the problem of the male in the childless couple. This book and its companion volume, **Fertility in Women**, by Samuel L. Siegler, provide two excellent monographs on fertility.

The profession in general has not fully appreciated the role of the male in the sterility problem. There has been a general conception, amounting to a serious prejudice, that potency and fecundity are synonymous in the male.

The method of examination is outlined in careful detail, so that anyone who is interested can learn from this monograph the rudiments of investigation of the husband. Adequate direction for semen specimen examinations are given and the significance of sperm counts is carefully explained. It is unfortunate that more space was not given to testicular biopsy, and the significance of these findings.

The book contains many illustrative cases, which give it much reading interest.

A careful evaluation of endocrine therapy in male infertility is given.

The reviewer enthusiastically recommends this book to the urologist and to the general practitioner, who see the problems of sterility, and who must direct their patients into an adequate examination if results are to be obtained.

Lippincott's Quick Reference Book for Medicine and Surgery. A clinical, diagnostic, and therapeutic digest of general medicine, surgery, and the specialties, compiled systematically from modern literature. By George E. Rehberger, A. B., M.D. 1460 pages. Price, $15.00. Philadelphia: J. B. Lippincott Company, 1944.

This large volume is an attempt to summarize the greater part of medical practice in a single work. It has apparently been designed for the use of general practitioners. In an attempt to condense material, the basic fundamental physiology and pathology are usually omitted or discussed superficially. Treatment is usually extensively detailed, but little or no attempt is made to differentiate critically between good and bad. A number of errors are found throughout the book. and one need only go as far as the second page to find that the pH of water is 7.4! An attempt is made to dress the book up with numerous color plates taken from previously published works. Some should prove very helpful indeed, but the value of two colored plates on gallstones, two colored plates on bronchostenosis, including the bronchoscopic picture, and a full page illustration of a malignant melanoma of the breast is very doubtful. The section on treatment of cardiac insufficiency or failure, particularly regarding the use of digitalis and the use of drugs for collapse, is very poorly done.

Hypertension and Hypertensive Disease. By William Goldring, M.D., Associate Professor of Medicine, New York University College of Medicine; and Herbert Chasis, M.D., Assistant Professor of Medicine, New York University College of Medicine. 253 pages. Price, $3.50. New York: The Commonwealth Fund, 1944.

This monograph presents the results of fifteen years' study on hypertensive patients using methods developed jointly by the Departments of Physiology and Medicine at New York University College of Medicine. The authors have summarized and interpreted in the light of their experience key articles from the literature, but very wisely have made no attempt to review extensively the tremendous number of articles on this subject. The conclusions drawn are usually conservative. Methods of obtaining the data quoted are detailed and the virtues of various methods discussed. The chapter, "Renal Function and Renal Hemodynamic Alterations in Hypertension," clearly discusses the underlying physiology, which is usually overlooked by the practicing physician. The importance of accurate diagnostic tests and of the recognition of early hypertension is stressed. The difficulties of interpreting the results of treatment by special medical methods are outlined; many are shown to be non-specific effects. The authors believe that there is a fundamental difference between clinical and experimental renal hypertension, and hence are very cautious in interpreting results in experimental animals. Surgical treatment is recognized as frequently affording symptomatic relief, but the authors do not believe that the surgical approach gets at the cause of hypertension. The chapter on "The Management of Hypertensive Disease" offers little that is new. Technical methods are wisely detailed in an appendix. This facilitates the reading of the text. The practicing physician could very profitably review periodically the studies on fundamental mechanisms in frequently seen clinical syndromes.

Rebel Without a Cause, The Hypnoanalysis of a Criminal Psychopath. By Robert M. Lindner, Ph.D., United States Public Health Service (R), Psychologist, United States Penitentiary, Lewisburg, Pa.; Lecturer in Criminology, Bucknell University. Introduction by Sheldon Glueck, LL.B., Ph.D., Professor of Criminal Law and Criminology, Law School, Harvard University; and Eleanor T. Glueck, Ed.D., Research Criminologist, Law School, Harvard University. 310 Pages. Price, $4.00. New York: Grune and Stratton, Inc., 1944.

The author has not only written a very fascinating and most interesting book but has also approached the problem of the criminal psychopath in a very humane, sympathetic, and understanding way. This book might easily become a fundamental pathbreaker for the future treatment of these people. A problem that heretofore has been looked upon with awe and despair by leading authorities is tackled in a very courageous and promising way, indeed.

The methods of psychoanalysis and hypnosis are combined in what the author calls hypnoanalysis. and an almost verbatim account of the treatment of a criminal psychopath with this method is given. It is of special interest that it has been possible with this method to trace memories back beyond the usual 2 year age level to a time before the patient was a year old. The author's ideas are in some respects almost revolutionary and are very stimulating. He should be congratulated for his courageous expression of his opinion and for a very thorough piece of work.

Every physician who is bound to meet the psychopathic personality in some form in his work will profit by reading this account. To the psychiatrist, psychologist, social worker, and all others who are called upon at times to help the law and who are concerned not only with the welfare of their patients and the development of society but also with the aspects of future world peace, this book is highly recommended for reading.

Introduction to Exceptional Children. By Harry J. Baker, Ph.D., Director, Psychological Clinic, Detroit Public Schools. 496 pages. Price, $3.50. New York: The Macmillan Company, 1944.

This book represents a small encyclopedia of the problems which confront parents, teachers, and others who are entrusted with the care of children. It reviews, enumerates, and discusses to some degree the difficulties of the handicapped, as well as of the gifted child. Much more space and discussion are given to the various problems of the handicapped child. The book is primarily written for teachers and contains a great deal of valuable material for them. Public health nurses and social workers might also find much in the book that will be of interest and help in their work. For the physician who deals with children, and with exceptional children in particular, the book does not have very much to offer.

Clinical Significance of the Blood in Tuberculosis. By Gulli Lindh Muller, M.D., Pathologist and Director of Laboratory, New England Hospital for Women and Children, Boston; formerly Pathologist, Rutland State Sanatorium, Rutland, Massachusetts. 516 pages. Price, $3.50. New York: The Commonwealth Fund, 1943.

This monograph summarizes the author's experience with serial blood examinations in consecutive patients with tuberculosis in a sanatorium. The literature is extensively reviewed and the author's observations with repeated careful hematologic examinations are recorded in relation to findings and opinions in the literature. The author's data call attention to changes in the polymorphonuclear cells which are frequently overlooked but are of importance. In the author's cases, the ratio of large mononuclear to small mononuclear cells has not proven as significant as data in the literature would indicate. Of great interest is the author's revival of an older test making use of the response of the leukocytes to the injection of tuberculin. This is not commonly used but, to judge from the data quoted, might be more generally adopted. The normal variations in all tests and the factors which alter normal values are discussed, both from the technical and the theoretical points of view. The alterations in the hematologic picture are discussed in relation to diagnosis, to the selection of patients for therapeutic collapse measures and to the ultimate prognosis or evidence of activity. This book is indespensable for all who are working with tuberculous patients in institutions or in private practice.

Medical Care of the Discharged Hospital Patient. By Frode Jensen, M.D., H.G. Weiskotten, M.D., and Margaret A. Thomas, M.A. (Oxon). 94 Pages. Price, $1.00. New York: The Commonwealath Fund, 1944.

This small volume deserves very careful and thoughtful reading by hospital administrators and physicians charged with the care of large groups of patients. This report grew out of a study of a University Medical School Hospital which attempted to reduce the expense of repeated hospital admissions for chronic disease. Several extremely interesting facts have been brought to light. Approximately 90 per cent of the cost of hospitalization of patients on the general medical wards was expended for chronic illnesses. It was found that ill health was closely bound up with the emotional, social, and economic factors in the life of the individual. The program consisted of post-hospitalization supervision and follow-up of chronically ill patients by an Extramural Resident working directly with the patients or through the family physician. It was found that a close and continuous relationship between doctor and patient is fundamental to good medical care. Approximately one-fifth of the total cost of hospitalization during the experiment was expended in the care of patients with chronic cardiovascular disease in the first admission alone. Short case histories are given to illustrate the importance of social and economic factors in chronic illness.

Our American Babies, The Art of Baby Care. By Dorothy V. Whipple. 354 pages. Price, $2.50. New York: M. Barrows and Company, Inc., 1944.

This is a book written to help mothers. Dr. Whipple is the principal author of the 1942 revision of the Children's Bureau's **Infant Care**, and she has made this book equally as clear with many practical suggestions. The problems of clothing, feeding, bathing, training, growth and development are all covered in a very informative way, spiced with much common sense.

To this reviewer the only undesirable feature of the book is the section on specific ailments, including everything from heat rash to tuberculous meningitis. Upon an apprehensive, slightly immature mother this section might have an undesirable psychological effect. The book in general, however, can be highly recommended to the average parent.

New and Nonofficial Remedies, 1944. Containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1944. Cloth. Price, $1.50. Pp. 778. Chicago: American Medical Association, 1944.

The practicing physician is constantly deluged with advertising by mail on the virtues of hundreds of new drugs. This is frequently reinforced by recitation of a set "piece" by a salesman who understands little of the problem involved. The claims and dosages submitted by manufacturers are subjected to careful scrutiny by the Council on Pharmacy and Chemistry, and those products which justify the claims are accepted for inclusion in this work. This volume, issued yearly, reviews the pharmacology of new drugs critically. The practicing physician can make no better annual investment in order to keep abreast of the times and to separate the wheat from the chaff in drug therapy. A new departure this year is the long overdue decision to use the metric system exclusively. Another forward advance is the inclusion of a chapter on contraceptives.

Good Health of Troops in the U. S.

Admissions to military hospitals from troops stationed in the U. S. show that these soldiers are much healthier than were the troops stationed here during the last war. During the mobilization period, as might be expected in so large an army, admissions for disease increased somewhat over the peacetime rate. However, this rate is now dropping to peacetime level and rates of admission for respiratory and all important communicable diseases are far lower than in 1917-1919.

The death rate shows an even more marked improvement. It is not only lower than World War I, but is lower than the rate for the intervening peace years. This is probably due largely to the following factors: (a) reduced incidence of several communicable diseases which contribute appreciably to the mortality rate, (b) improved methods of treatment, most important being the introduction of chemotherapeutic agents, and (c) lowered average age of troops.

New Journal of Parenteral Therapy Published

Publication of a new quarterly, **The Journal of Parenteral Therapy**, is announced by Science Publications Council, New York. Among the topics discussed in the first issue, dated Fall, 1944, are parenteral dosages of penicillin, human serum albumin concentrated, sterile medicaments, painless venipuncture, intravenous therapy and literature on shock. Other subjects listed with which the new journal will treat, include: amino acids, blood transfusion, body fluids, chemotherapy, dextrose and glucose solutions, nutrition, plasma, postoperative care, pyrogens, serums, trauma and war medicine.

The advisory editorial board of **The Journal of Parenteral Therapy** includes the following physicians and surgeons: W. Wayne Babcock, Philadelphia; I. A. Bigger, Richmond, Va.; Alexander W. Blain, Detroit; Frederick A. Coller, Ann Arbor, Mich.; Joseph H. Fobes, New York; Henry N. Harkins, Baltimore; Lester Hollander, Pittsburgh; Alton Ochsner, New Orleans: Max M. Strumia, Bryn Mawr, Pa.; George J. Thomas, Pittsburgh; Justus J. Schifferes, New York, is managing editor.

Distribution of the new publication to 16,000 surgeons and hospital executives, to all internes and medical libraries is made possible by a grant from Hospital Liquids, Inc., Chicago.

Under-Secretary of War Robert Patterson has awarded the Winthrop Chemical Company, Inc. of New York and Rensselaer, New York, its third Army and Navy Award for "high achievement in production of war material".

Winthrop Chemical Company first received the Army and Navy "E" on December 17th, 1942 and was awarded a white star in March of this year. Currently, a major portion of the Company's production of drugs is going to the armed forces.

Appointment of P. Val. Kolb as Director of the Special Markets Division of Winthrop Chemical Company, Inc., was announced by Dr. Theodore G. Klumpp, president, recently.

Since 1940, Mr. Kolb has been associate director of Winthrop's Special Markets Division in charge of vitamin sales.

In this capacity, Mr. Kolb sold to the baking industry the first bread enrichment tablet used in the United States. Winthrop has long cooperated with the United States government, the baking and milling industries in a program of bread and flour enrichment. To millers and bakers, Winthrop is known for its bulk vitamins, "Vextram", a flour enrichment mixture, and "B-E-T-S", the bread enrichment tablets.

New Ethicon Eye Sutures Developed by Johnson & Johnson

As a result of several years research a new and complete line of seventeen Eye Sutures has just been announced by the Ethicon Suture Division of Johnson & Johnson.

The new Ethicon Eye Sutures, offered in Plain and Type B Mild Chromic Surgical Gut, as well as Twisted Silk, are distinguished by their unusual flexibility.

All Ethicon Eye Sutures are equipped with Eyeless Atraloc Cutting Point Needles. These needles, made under a Johnson & Johnson patent, are hand-forged and hand-sharpened. All materials in Ethicon Eye Sutures are selected to meet the exacting requirments of the eye surgeon.

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There's a day coming when the enemy will be licked, beaten, whipped to a fare-thee-well—every last vestige of fight knocked out of him.

And there's a day coming when every mother's son of us will want to stand up and yell, to cheer ourselves hoarse over the greatest victory in history.

But let's not start the cheering yet.

In fact, let's not start it at all—over here. Let's leave it to the fellows who are *doing* the job—the only fellows who will *know* when it's done—to begin the celebrating.

Our leaders have told us, over and over again, that the smashing of the Axis will be a slow job, a dangerous job, a bloody job.

And they've told us what our own common sense confirms: that, if we at home start throwing our hats in the air and easing up before the job's completely done, it will be slower, more dangerous, bloodier.

Right now, it's still up to us to buy War Bonds—and to *keep on* buying War Bonds until this war is completely won. That doesn't mean victory over the Nazis *alone*. It means bringing the Japs to their knees, too.

Let's keep bearing down till we get the news of final victory from the only place such news can come: the battle-line.

If we do that, we'll have the *right* to join the cheering when the time comes.

Keep backing 'em up with War Bonds

NORTH CAROLINA MEDICAL JOURNAL

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